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IDENTIFIERS Courseware Evaluation

ABSTRACT

This revision of the annotated bibliography, "Computer-Based Education: The Best of ERIC, June 1976-August 1980," includes 224 new entries as well as most of the 156 ERIC documents and journal articles originally cited. The new materials reflect the increased activity in the field with contributions about new technology (artificial intelligence, authoring systems, and interactive video technology), new audiences (adult, off-campus learners, and incarcerated learners), content applications (guidance and career and vocational information, mathematics, computer science, data analysis, statistics, and reading), developmental efforts with PLATO, and basic research. Outstanding growth areas identified include applications for exceptional learners and the teaching of writing and computer literacy; development efforts with LOGO; research on problem solving; computer managed intstruction, computer assisted testing, and instructional simulations; and courseware evaluation. Other new areas include business and industry, museum audiences, geology, and study skills. Increasing interest in microcomputers is reflected in sections on technology applications for specific content and audiences. A brief introduction discusses instructional methods included in computer-based education, explains the subject headings used in the bibliography, and briefly describes the new materials added to this edition. An author index is provided, as well as information for ordering ERIC documents. (BBM)

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ED232615

COMPUTER-BASED EDUCATION

The Best of ERIC June 1976 - 1982

Revised and Updated

by

Keith A. Hall

December 1982

ERIC Clearinghouse on Information Resources
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Syracuse, New York

IR010805

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Prior publications from ERIC/IR on this topic are:

Computer-Based Education: The Best of ERIC June 1976-August 1980
by Keith A. Hall (ED 195 288). 1980.
Computer Assisted Instruction: The Best of ERIC 1973-May 1976
by Marian Beard (ED 125 608). August 1976.

The Best of ERIC: Recent Trends in Computer-Assisted Instruction
by Richard Clark (ED 076 025). 1973.

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INTRODUCTION

ERIC documents and journal articles on computer based education (CBE) have been selected for this bibliography from the wealth of materials either entered in the ERIC files or indexed in Current Index to Journals in Education since May 1976, and deal with such facets of CBE as tutorials, drill, and simulation. Since the literature crosses these facets in a manner that would make an arrangement in such categories less than useful, another approach has been used in organizing this bibliography. Both the types of instruction covered and the subject categories used are discussed in this introduction.

Parameters of CBE

The term CBE, rather than computer-assisted instruction (CAI), is used purposely so as to encompass a broader spectrum of computer applications than CAI, which has come to mean primarily tutorial instruction. CBE employs the power and flexibility of a computer to provide instruction to learners via terminals or microprocessors, and is used here to include computer managed instruction, interactive instruction, and instructional simulations. Although student use of the computer for problem solving as part of the assigned coursework is clearly computer-assisted instruction, it is sufficiently different that it is excluded from discussion in this paper.

Each of the instructional techniques (management, interactive instruction, and simulation) employs the computer in a different role in the instructional process. Computer managed instruction relies principally on the record-keeping and summarizing power of the computer. Interactive instruction, which subsumes the concepts of tutorial instruction and drill and practice, presents instructional material to the learner, accepts and judges responses from the learner, provides feedback, and alters the instruction based upon the learner's responses. Simulation allows the student to access and manipulate pools of data in an environment that approximates reality. The instructional techniques (management, interactive instruction, and simulation) are arranged in an ascending hierarchy (from left to right in Figure 1) which reflects the increasing complexity of both instructional tasks and learning tasks as the learner moves from the acquisition of knowledge to the use and integration of knowledge. The locus of control shifts from the computer to the learner as the learner moves through the stages of learning. The shift from the computer to the learner is also reflected by the terms used to identify the instructional functions; i.e., the instructional functions in management describe the functions performed by the computer, while the instructional functions in simulation describe functions performed by the learner. The locus of control in interactive instruction is shared by the computer and the learner and the terms describing those functions reflect the shared control.

Although the factors of terminal/computer complexity, development time, and student time on terminal (Figure 2) have minimal importance for curricular and instructional decision making, they are of central importance for administrative planning because of their impact on costs.

Viability of CBE

Several factors indicate the continuing viability of CBE: its increased use despite the reduced level of federal funding over the last decade; faculty acceptance, as evidenced by the formation of CBE interest groups within national organizations; and perhaps most importantly, student acceptance, as indicated by increased enrollments in courses that utilize CBE. Student acceptance can be attributed to the following features of CBE: (1) "no nonsense" learning environment, (b) predetermined scope and sequence of individually adaptive programs (no "surprises" midway through the course), (c) student-selected schedule and pace, (d) students' control of their own progress, and (e) impartial judgments of student progress.

Overview of the Bibliography

Steady advances in technology--both hardware and software, expanded use for new audiences and in a growing variety of content areas, continuing developmental efforts and basic research, and a growing literature have suggested six major topics around which the bibliography has been organized.

<table>
<tr><th></th><th colspan="3">CBE Instructional Techniques</th></tr>
<tr><th></th><th>Management</th><th>Interactive Instruction</th><th>Simulation</th></tr>
<tr><td>Instructional Functions</td><td>Assess
Diagnose
Prescribe
Monitor</td><td>Present
Practice
Feedback
Consolidate Learning
Enhance Retention</td><td>Apply
Analyze
Synthesize
Integrate</td></tr>
<tr><td>Stages of Learning</td><td colspan="2">Acquisition of Knowledge</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">Use of Knowledge</td></tr>
<tr><td>Locus of Control</td><td colspan="2">Computer</td><td></td></tr>
<tr><td></td><td></td><td colspan="2">Learner</td></tr>
<tr><td>Historical References</td><td>Baker, 1971
Mitzel, 1974</td><td>Fletcher, 1975
Glaser, 1976
Jamison, Suppes, and Wells, 1974
Merrill and Boutwell, 1972
Vinsonhaler and Bass, 1972</td><td>Greenblat, 1975
Rosenfeld, 1975</td></tr>
</table>

Figure 1. CBE Instructional Techniques and Instructional Factors.

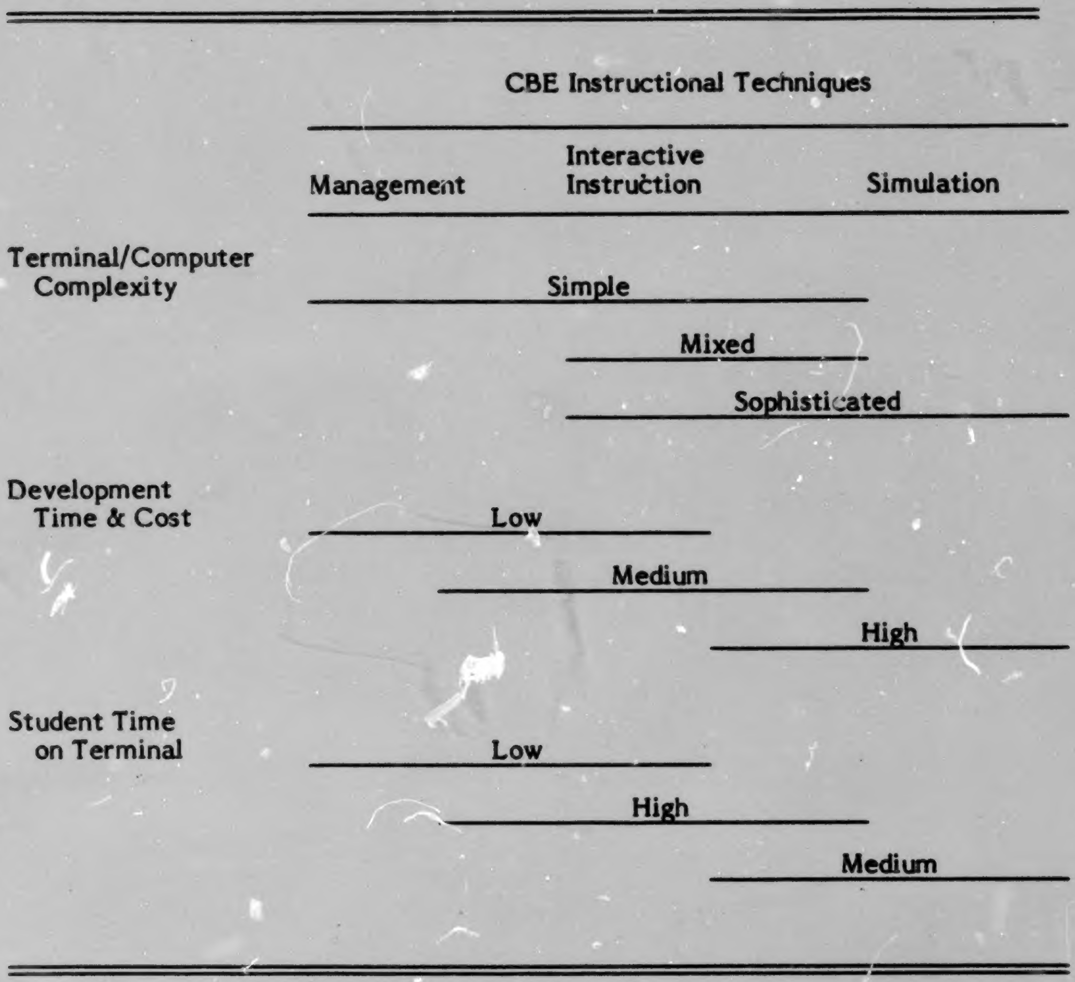
CBE Instructional Techniques
Management
Interactive Instruction
Simulation
Terminal/Computer Complexity
Simple
Mixed
Sophisticated
Development Time & Cost
Low
Medium
High
Student Time on Terminal
Low
High
Medium

Figure 2. CBE Instructional Techniques and Administrative Factors.

New Technology for CBE has evolved from earlier basic research in instruction, the educational use of computers, computer technology, and related fields. Significant contributions have been published in the areas of

artificial intelligence,
audio input/output devices,
author languages,
graphics,
microprocessors, and
videodiscs.

New Audiences served include

adult, off-campus learners,
handicapped learners, and
incarcerated learners.

Many of the included references have demonstrated the feasibility of off-campus instruction with (now) outmoded equipment. Technological advancements (multi-sensory input and output devices, and stand-alone microprocessors) will further expand the availability of educational opportunity to new audiences.

Content Area Applications are highlighted, not only to show the widespread applicability of CBE technology, but also to call special attention to the persons actively involved in CBE in specific content areas. A powerful mechanism for promoting the development and use of CBE materials is to encourage the formation of content-oriented special interest groups within national organizations. Familiarity with the work of active colleagues across the nation is the logical starting point.

Content applications include the following:

agriculture,
basic skills,
economics,
English,
guidance and counseling,
health sciences,
languages,
law,
mathematics/computer science/data analysis/statistics,
music,
reading,
science, and
social studies.

Developmental Efforts of significant scope include the following:

PLATO,
TICCIT, and
Training Teachers in Uses of Computers.

Basic Research reports are included in two categories:

problems and
miscellaneous.

The nature of this bibliography does not lend itself to an extended treatise on the scope of variables found in CBE research. However, selected references are included.

Collections included published proceedings from conferences related to CBE. At the time of publication, proceedings frequently contain the most current work in the field--yet they cannot be easily sorted into the categories used in this bibliography. For example, the collections include proceedings from:

Association for the Development of Computer-based Instructional Systems
  Conferences (ADCIS),
Association for Educational Data Systems (AEDS) Conferences,
Conferences on Computers in the Undergraduate Curricula, and
National Educational Computing Conference (NECC).

HISTORICAL REFERENCES

Computer-Managed Instruction

Baker, F. B. Computer-based instructional management systems: A first look. *Review of Educational Research*, 1971, *41*(1), 51-70.

Mitzel, H. E. (Ed.). *An examination of the short-range potential of computer-managed instruction. Conference proceedings*. University Park: The Pennsylvania State University, 1974.

Interactive Instruction

Fletcher, J. D. Modeling the learner in computer assisted instruction. *Journal of Computer-Based Instruction*, 1975, *1*(4), 118-126.

Glaser, R. Components of the psychology of instruction: Toward a science of design. *Review of Educational Research*, 1976, *46*(1), 1-24.

Jamison, D., Suppes, P., & Wells, S. Effectiveness of alternative instructional media. *Review of Educational Research*, 1974, *44*(1), 1-67.

Merrill, M. D., & Boutwell, R. C. *Instructional development: Methodology and research* (Working Paper No. 33). Provo, Utah: Brigham Young University, Department of Instructional Research and Development, May 1972.

Vinsonhaler, J. & Bass, R. A summary of ten major studies of CAI drill and practice. *Educational Technology*, 1972, *12*(12), 29-32.

Instructional Simulation

Greenblat, C. S. Teaching with simulation games: A review of claims and evidence. In C. S. Greenblat and R. D. Duke (Eds.), *Gaming-simulation: Rationale, design, and applications*. New York: Wiley, 1975.

Rosenfeld, F. H. The educational effectiveness of simulation games: A synthesis of recent findings. In C. S. Greenblat & R. D. Duke (Eds.), *Gaming-simulation: Rationale, design, and applications*. New York: Wiley, 1975.

ORGANIZATION OF THE BIBLIOGRAPHY

ERIC documents, journal articles, and other items cited in this bibliography are arranged in subject categories and alphabetized by author within each category. If no personal author is named, the title is used.

An exception has been to keep together journal articles which appeared in special issues. They are listed individually as they are indexed in Current Index to Journals in Education (CIJE) and alphabetized by author within the set. The set is then listed by the author of the first article cited. A second exception is the listing of conference proceedings for a single organization in chronological order. Also, if a comprehensive bibliography or a review of the literature on the topic is listed, it will appear first under a new heading. Each article or document is referenced only once (with a few exceptions), and that reference is in the category which seems to reflect its major emphasis. Very little cross referencing has been done of overlapping topics. The reader might find it helpful to look in similar categories or for other works by the author(s) of items of special interest.

Subject categories and their subdivisions are listed in the table of contents, and the author index lists all authors whose names appear in the bibliographic citations. Note: In the ERIC system, the first personal author is always listed, together with the second of two authors. However, if there are more than two, only the first is named, followed by "And Others."

Annotations and abstracts used for ERIC materials appear, for the most part, as they were printed in Resources in Education (RIE) and CIJE, and bibliographic citations for a few items which are not in the ERIC system follow this format in the main bibliography.

ERIC Documents

Each ERIC document is identified by a unique ED number which is used to locate the announcement in RIE, the text of the original document in the microfiche collection, or to order microfiche (MF) or paper copy (PC) of the original from the ERIC Document Reproduction Service (EDRS). The occasional ERIC document which is not available from EDRS is usually copyrighted, and an alternate source is provided with the abstract. Such documents are not included in the microfiche collection.

The number opposite the ED number identifies the clearinghouse that processed the document; e.g., IR is the 2-letter code for this clearinghouse, CS indicates the ERIC Clearinghouse on Reading and Communication Skills, and SE stands for the ERIC Clearinghouse for Science, Mathematics, and Environmental Education. A complete list appears on the inside back cover of the monthly issues of RIE.

The document type provided for recent ERIC documents and articles was implemented in July 1979, and the corresponding number is used in computer searching. The brief explanation of the code given these abstracts is the version used by the DIALOG Information Retrieval Service.

Prices for reprints from EDRS are provided in code for each ERIC document, and a table for converting these codes to the prices current at the time of printing appears on the sample order blank at the end of this book.

Journal Articles

Each journal article indexed in CIJE has a unique EJ number, which should be used in ordering reprints from University Microfilms International (UMI). Since UMI cannot offer this service for all journals indexed in CIJE, such availability is indicated for each individual article with the annotation. For information on ordering and current prices, consult a recent issue of CIJE.

COMMENTS ON THE REVISED EDITION

Updating Computer-Based Education: The Best of ERIC June 1976-August 1980 to include ERIC acquisitions through 1982 has provided an opportunity to view (in broad perspective) the rapid changes which have occurred in the field. The addition of 224 entries to the 156 original entries is not solely a measure of increased activity in the field--although microcomputers have enabled many more people to work and contribute to the literature--but rather, it reflects a change in philosophy in selecting abstracts for inclusion. As the field and the number of participants have broadened it becomes less appropriate for one individual to select and recommend literature of interest to others. Rather, it seemed more appropriate to include a broader selection of classified items from which the reader could select. The new entries are marked with two asterisks in the margin for easy identification.

Noted Trends

Contributions about new technology (artificial intelligence, authoring systems, and interactive video technology), new audiences (adult, off-campus learners and incarcerated learners), content applications (guidance and career and vocational information; mathematics, computer science, data analysis, and statistics; and reading), developmental efforts with PLATO, and basic research have about doubled on an annualized basis in this edition. At the same time, the outstanding growth areas clearly have been new audiences (exceptional learners); content applications (writing and computer literacy), developmental efforts with LOGO, basic research (problem solving, computer-managed instruction, courseware evaluation, computer-assisted testing, and instructional simulations); and in collections of works. Other new areas of work include business and industry, museum audiences, geology, and study skills.

Other References

Two additional references for persons needing historical background or a summary of the effectiveness of computer-based education are listed below:

Hall, K. A. Computer-based education. In H. E. Mitzel (Ed.). The Encyclopedia of Educational Research (Vol. 1, Fifth Edition). New York: The Free Press, 1982.

Kulik, J. A., Kulik, C. C., and Cohen, P. A. Effectiveness of computer-based college teaching: A meta-analysis of findings. Review of Educational Research, Winter 1980, 50(4), 525-544.

Keith A. Hall
Columbus, Ohio
December 1982

BIBLIOGRAPHY

New Technology: Artificial Intelligence

ED152277 IR00573[illegible]

A Paradigmatic Example of an Artificially Intelligent Instructional System.
Brown, John Seely; Burton, Richard R.
Bolt, Beranek and Newman, Inc., Cambridge, Mass.
Jun 1977 27p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

This paper describes the philosophy of intelligent instructional systems and presents an example of one such system in the domain of manipulative mathematics--BLOCKS. The notion of BLOCKS as a paradigmatic system is explicated from both the system development and educational viewpoints. From a developmental point of view, the modular design of BLOCKS provides a working framework within which to explore different monitoring functions and various tutoring strategies. From an educational viewpoint, BLOCKS provides a dramatic example of the potential of a computerized intelligent tutor in a laboratory environment. By monitoring the student's behavior, the system can notice interesting situations and direct the student's attention to them. In this way, the computer can provide conceptual structure and guidance to a student's otherwise undirected experiences. (Author/VT)

**ED207587 IR009705

Wusor II: A Computer Aided Instruction Program with Student Modelling Capabilities. AI Memo 417.
Carr, Brian
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
May 1977 133p.; Master's Thesis, Massachusetts Institute of Technology.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC06 Plus Postage.
Document Type: THESIS (042)

Wusor II is the second intelligent computer aided instruction (ICAI) program that has been developed to monitor the progress of, and offer suggestions to, students playing Wumpus, a computer game designed to teach logical thinking and problem solving. From the earlier efforts with Wusor I, it was possible to produce a rule-based expert which possessed a relatively complete mastery of the game. Wusor II endeavors to teach the knowledge embodied in the rules used by the expert. The student model represents Wusor's estimation of the student's knowledge of these rules, and this estimation is based primarily on analyses of the player's moves. The student model allows Wusor to personalize its explanations to the student according to the student's current knowledge of the game. The result is a system which, according to preliminary results, is highly effective at tutoring students of varied abilities. Thirty-three references are listed. (Author/LLS)

ED143371 IR005161

Intelligent Instructional Systems in Military Training.
Fletcher, J.D.; Zdybel, Frank
Apr 1977 17p.; Paper presented at the annual meeting of the American Educational Research Association (New York, New York, April 1977)
EDRS Price - MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150)

Intelligent instructional systems can be distinguished from more conventional approaches by the automation of instructional interaction and choice of strategy. This approach promises to reduce the costs of instructional materials preparation and to increase the adaptability and individualization of the instruction delivered. Tutorial simulation and tutorial dialogue capabilities require a computer to: (1) generate problem statements and solutions; (2) determine efficient sequences; and (3) simulate a variety of situations encountered on the job. These enable students to: (1) test their own hypotheses concerning the subject matter; (2) probe for information at different levels of difficulty and abstraction; (3) acquire wide experience in minimum time; (4) obtain instructional material generated for their unique abilities and needs; (5) receive instructional aids for partially completed solutions; and (6) receive reviews and critiques of completed problem solutions. Description of the Welfare Effectiveness Simulation (WES) in military training, directions for development of intelligent instructional systems, and references are included. (Author/KP)

**ED207586 IR009704

The Computer as Coach: An Athletic Paradigm for Intellectual Education. AI Memo 389.

Goldstein, Ira
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Dec 1976 75p.; For a related document, see IR 009 705.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

This paper is a preliminary proposal to develop the theory and design for "coaches" for computer games, to implement prototypes, and to experiment with their ability to convey important intellectual skills. The focus of this project will be restricted to developing a coach for a single example of an intellectual game called Wumpus. It is pointed out that, while computer games have a powerful educational appeal, they also have a limitation in that the player, on his own, can fail to acquire the skills of an expert. A computer coach, which could provide advice on strategy and tactics for better play and tutor basic mathematical, scientific, or other kinds of knowledge related to the game, could overcome that limitation. The project would address three specific questions: (1) how the expertise can be designed in the coach so that it can respond reasonably to the player's particular choice of move; (2) how the player can be modeled sufficiently so that the coach's remarks are appropriate, i.e., neither too advanced for a beginner nor too elementary for an expert; and (3) how the nature of the coach's advice can be controlled so that it is given in a friendly and personal manner. Fifty-six references are listed. (Author/LLS)

**ED196710 SE033691

A Research Study of Computer-Based Tutoring of Mathematical and Scientific Knowledge. Final Technical Report.

Goldstein, Ira
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
1980 36p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Computer coaching of students as an aid in problem-solving instruction is discussed. This report describes an advanced form of computer-assisted instruction that must not only present the material to be taught, but also analyze the student's responses. The program must decide whether to intervene and how much to say to a pupil based on its knowledge of the player or players in an ever-changing context. The focus of this project is problem solving using the Wumpus Game. An evolution of computer coaches from a simple rule-based approach to a more complex model is described. (MP)

ED152294 IR005775

The Relevance of AI Research to CAL

Kearsley, Greg P.
Alberta Univ., Edmonton. Div. of Educational Research Services.
Feb 1977 25p.; Best copy available
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

This article provides a tutorial introduction to Artificial Intelligence (AI) research for those involved in Computer Assisted Instruction (CAI). The general theme is that much of the current work in AI, particularly in the areas of natural language understanding systems, rule induction, programming languages, and socratic systems, has important applications to CAI. A recommendation for more planned interaction between AI and CAI includes possibilities for joint conferences and joint research projects. (Author/VT)

ED175436 IR007602

Modeling User Behavior in Computer Learning Tasks.

Mantei, Marilyn M.
2 Apr 1979 29p.; Paper presented at the Annual Conference of the American Educational Research Association (San Francisco, California, April 8-12, 1979)
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.; Office of Naval Research, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Language: English
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Model building techniques from Artifical Intelligence and Information-Processing Psychology are applied to human-computer interface tasks to evaluate existing interfaces and suggest new and better ones. The model is in the form of an augmented transition network (ATN) grammar which is built by applying grammar induction heuristics on a sequential record of a user's interaction with a computer system. A computer-aided instruction experiment is described which illustrates the model building technique. Variations in the task presentation are constructed in the ATN grammar and used to pinpoint interface design problems. (Author/RAO)

**ED207584 IR009702

PAZATN: A Linguistic Approach to Automatic Analysis of Elementary Programming Protocols. AI Memo 388.

Miller, Mark L.; Goldstein, Ira P.
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Dec 1976 94p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

PATN is a design for a machine problem solver which uses an augmented transition network (ATN) to represent planning knowledge. In order to explore PATN's potential as a theory of human problem solving, a linguistic approach to protocol analysis is presented. An interpretation of a protocol is taken to be a parse tree supplemented by semantic and pragmatic annotation attached to various nodes. This paradigm has implications for constructing a cognitive model of the individual and designing computerized tutors. Manual protocol analysis is tedious and informal; hence the design for PAZATN, an automatic protocol analyzer, is presented. PAZATN uses PATN as a generator for possible interpretations of the protocol, with bottom-up evidence biasing PATN toward plans which are likely to match the data. PAZATN is a domain independent framework for constructing specialized protocol analyzers. To apply PAZATN to a particular task domain, event specialists (ESP's) are needed which embody syntactically organized domain knowledge. ESP's for the LOGO graphics programming domain are defined and PAZATN's operation is hand-simulated on an elementary protocol for this domain. Forty-one references are listed. (Author/LLS)

**ED207579 IR009697

Overview of a Linguistic Theory of Design. AI Memo 383A.

Miller, Mark L.; Goldstein, Ira P.
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Feb 1977 38p.; For related documents, see IR 009 700-702.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.; National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Language: English
Document Type: PROJECT DESCRIPTION (141)

The SPADE theory, which uses linguistic formalisms to model the planning and debugging processes of computer programming, was simultaneously developed and tested in three separate contexts--computer uses in education, automatic programming (a traditional artificial intelligence arena), and protocol analysis (the domain of information processing psychology). In the education context, an editor has been implemented that encourages students to define and debug programs in terms of explicit design choices. The editor provides a structured programming environment based on a detailed theory of the processes involved in coherently structured problem solving. In the AI context, an automatic programmer called PATN was designed using an augmented transition network embodiment of the SPADE theory. This resulted in a unified framework which clarified work on planning and debugging by Sacerdoti and Sussman. In the psychology context, a parser called PAZATN has been designed that applies the SPADE theory to the analysis of programming protocols to produce a parse delineating the planning and debugging strategies used by the problem solvers. Hand-simulations of PATN and PAZATN on elementary programming problems and informal experiments with the SPADE editor demonstrate the effectiveness of the theory in accounting for a wide range of planning and debugging techniques. Twenty-six references are listed. (Author/LLS)

ED178072 IR007815

Studies of Learning and Self-Contained Educational Systems, 1976-1979. Final Report No. 7902.
Norman, Donald A.
California Univ., San Diego. Center for Human Information Processing.
Jun 1979 20p.; For related document, see ED 140 821
Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The studies summarized in this report on instructional theory and computer based tutorial systems were directed at two aspects of the study of learning and instruction: the theoretical understanding of human memory and the development of intelligent interactive computer systems for instruction. Two major computer-based tutorial systems developed by the project--Coach and Instruct--are discussed. (RAO)

ED145837 IR005278

Generative Computer-Assisted Instruction and Artificial Intelligence. Report No. 5.
Sinnott, Loraine T.
Educational Testing Service, Princeton, N.J.
Oct 1976 31p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: BIBLIOGRAPHY (131)

This paper reviews the state-of-the-art in generative computer-assisted instruction and artificial intelligence. It divides relevant research into three areas of instructional modeling: models of the subject matter; models of the learner's state of knowledge; and models of teaching strategies. Within these areas, work sponsored by Advanced Research Projects Agency (ARPA) plays a prominent role in theoretical advances. ARPA sponsored research has concentrated both on the development of instructional systems teaching subjects like programming and problem solving, and on research basic to the improvement of adaptive instructional systems in general. The review concludes that as a CAI system becomes more responsive to natural language input, the number of extraneous skills a student must develop in order to interact with the program decreases. Also, providing an author with the opportunity to interact with the computer in natural language lessens the time required to create CAI materials, as well as the constraints imposed on those materials by working in a programming language. (Author)

**ED207585 IR009703

Wumpus Advisor I. A First Implementation of a Program That Tutors Logical and Probabilistic Reasoning Skills. AI Memo 381.
Stansfield, James L.; And Others
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Oct 1976 68p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.; National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

An Intelligent Computer Aided Instruction (ICAI) program that incorporates an Expert module which allows the tutor to compare the student's response to those generated by an expert was developed for use with Wumpus, a simple maze-exploration game. The Wumpus Advisor program offers advice to a player involved in choosing the best move in a game for which competence in dealing with incomplete and uncertain knowledge is required. The design and implementation of the advisor explores a new paradigm in computer assisted instruction, in which the performance of computer based tutors is greatly improved through the application of artificial intelligence techniques. The advisor acts as an interface between the student and the game, intervening whenever the student's moves show that s/he needs advice. Advice is given as English discourse explaining in full the merits and faults of particular moves. Twelve references are listed. (Author/LLS)

New Technology: Audio Input/Output Devices

ED163971 IR006644

Research on Uses of Audio and Natural Language Processing in Computer-Assisted Instruction—Third Year Report. Technical Report No. 289.

Laddaga, Robert; And Others
Stanford Univ., Calif. Inst. for Mathematical Studies in Social Science.
23 Sep 1977 89p.; For related documents, see IR 006 644-647
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: RES as a CAEARCH REPORT (143)

Research carried out during the year focused on meeting project objectives in three main areas: computer-generated speech, complex teaching programs with audio, and teaching reading with audio. Work on computer-oriented speech was concerned with improving the facilities and procedures for utilizing the speech system software and the Micro Intoned Speech Synthesizer ("MISS machine"), as well as the continued development and improvement of sentential synthesis through intonation contouring with word concatenation. In the three complex teaching programs studied, work included the completion of the writing of audio and display only versions of lessons in a portion of the logic course, improving the interface with curriculum and lessons for the proof theory course. In the area of teaching beginning reading, a study in which three systems of computer-generated speech were compared to each other and a human-voice control on the task of producing individual letter sounds was designed and conducted with a group of first graders as subjects. A comparison of the three systems on a more complete list of sounds was carried out with fifth grade students. Experimental objectives, procedures, and results are detailed for each area, and a bibliography is provided. (BBM)

New Technology: Author Systems/Aids (Languages)

ED154774 IR005740

Summary of TUTOR Commands and System Variables. Sixth Edition.

Avner, Elaine
Illinois Univ., Urbana. Computer-Based Education Lab.
Sep 1977 130p.; For related document, see ED 124 130
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC06 Plus Postage.
Document Type: MISCELLANEOUS (999)

This summary is intended for the experienced author who needs a quick reference for the form of a tag and for the restrictions on the TUTOR language commands. Each command includes a brief description of its purpose and a description of the tag. The commands are grouped into the following categories: (1) calculating, (2) data keeping, (3) judging, (4) managing sites, (5) presenting, (6) routing, and (7) sequencing. The appendices include a list of the limits associated with commands and alphabetical lists of systems variables and commands. (DAG)

ED161412 IR006249

NATAL-74; First Results.

Brahan, J. W.; Westrom, M. L.
Mar 1978 12p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related documents, see IR 006 231 and 006 611
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PAPER (150)

NATAL is a high-level programming language designed to meet the requirements of the course author in the preparation of computer-assisted learning (CAL) materials. The basis for its design is found in the functional specification published by the National Research Council's Associate Committee on Instructional Technology; developers of the language also relied heavily on the 1969 EDUCOM report by Zinn, using his "aspects" for comparing programming languages as the basis for the definition of language requirements. The NATAL-74 project is outlined as follows: design goals, characteristics, implementations (course preparation system, file system, and run-time system), and preliminary evaluation. Education 491, a course on computers in secondary education, is taught to final-year education majors at the University of British Columbia. Six students from this course were permitted to do the NATAL-74 assignment, consisting of the construction of drill and practice programs in basic mathematics, rather than using a more limited CMI system. Results from this trial and other sources suggest that NATAL-74 meets the programming language requirements for CAL applications and can be an effective vehicle for the transfer of courseware between installations. (VT)

ED183202 IR008146

Common PILOT Manual. The Illinois Series on Educational Applications of Computers, Number 34.
Cox, John P.
Illinois Univ., Urbana. Dept. of Secondary Education.
Jul 1979 36p.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This manual presents an overview of the PILOT educational computer language, a simplified teacher-directed alternative to the use of BASIC for designing computer assisted instruction, and provides examples to illustrate its features. These features are described in terms of format, labels, numeric variables, alphanumeric variables, system variables, expressions and operators, functions, op-codes or commands, entering PILOT programs on the Horizon computer system, and running PILOT programs. Appendices describe proper use of vectors or arrays in PILOT programs, and exponential notation and ASCII code. (MV)

**ED211062 IR009880

A Standard's Guide for the Authoring of Instructional Software. Reference Manual Volume III.
Crawford, Stuart
JEM Research, Victoria (British Columbia).; Victoria Univ. (British Columbia).
1981 145p.; For related document, see IR 009 758.
Available from: JEM Research, Discovery Park, PO Box 1700, Victoria, B.C. V8W 2Y2 Canada ($75.00).
EDRS Price - MF01/PC06 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)

This guide gives step-by-step directions for authoring computer-assisted instruction materials as well as advice on planning, designing, coding, documenting, and evaluating computer assisted courseware. The importance of prospective courseware designers having a sound background in both educational theory and practice is also discussed, and various learning theories and their applications for computer courseware design are examined. Appendices provide information on choosing a computer language and on using graphics on the Apple II microcomputer. Courseware evaluation instruments are also included, and 65 references are listed. (LLS)

ED161418 IR006258

CBES—An Efficient Implementation of the Coursewriter Language.
Franks, Edward W.
Mar 1978 9p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PAPER (150)

An extensive computer based education system (CBES) built around the IBM Coursewriter III program product at Ohio State University is described. In this system, numerous extensions have been added to the Coursewriter III language to provide capabilities needed to implement sophisticated instructional strategies. CBES design goals include lower CPU usage per student interaction, fewer disk accessions per student interaction, all existing course materials to operate without alteration, system modifications to be transparent at the student level, standard Coursewriter III authoring capabilities to be maintained, and provision for enhancements to be made where practical. Other sections of the paper are concerned with system operation logic, distribution of processing, redundant processing, reducation of disk activity, locating and retrieving information, implementation, and enhancements. (VT)

**ED215662 IR010027
Extension of Computer-Assisted Team Training Through Coordinated Lesson Scenario.
Frye, Charles H.
Northwest Regional Educational Lab., Portland, Oreg.
Sep 1977 84p.
Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Arlington, Va.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

This research report discusses several efforts which were undertaken to assist PLANIT (Programming Language for Interactive Teaching) authors in the writing of team lesson scenarios. It also describes and illustrates the assistance given to two such authors who were engaged in the development of computer assisted instruction for training teams of tactical data system users. The text of the document first sets forth a definition of team training which is meant to be a frame of reference for the authoring features later discussed. After this, several specific authoring strategies are presented which enabled the kind of lesson presentation desired by the authors. A demonstration lesson is described which was developed to quickly show PLANIT team training concepts. The rationale for the lesson is described in the text and the lesson itself is appended as well as two other products of the effort: a set of recommended modifications to the PLANIT language designed to simplify the team authoring process, and a detailed set of authoring guidelines to help conventional PLANIT authors become "team" authors. (Author/LLS)

ED163972 IR006645
VOCAL: Voice Oriented Curriculum Author Language. Technical Report No. 291.
Hinckley, Michael; And Others
Stanford Univ., Calif. Inst. for Mathematical Studies in Social Science.
19 Oct 1977 47p.; For related documents, see IR 006 644-647
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

VOCAL (Voice Oriented Curriculum Author Language) is designed to facilitate the authoring of computer assisted curricula which incorporate highly interactive audio and text presentations. Lessons written in VOCAL are intended to be patterned after the style of informal classroom lectures. VOCAL contains features that allow the author to specify audio messages in several formats acceptable to the audio hardware and associated software, and to control the interaction of the audio presentation with material presented visually on the screen of a CRT terminal. This description of VOCAL includes an elaboration of its features, the Browse Mode, the Help System, and operation of the VOCAL Compiler and Interpreter. Appendices include a file format for compiled VOCAL files and implementations of the S Opcode. (CMV)

ED176801 IR007788
Computer-Assisted Instruction Using BASIC.
Huntington, John F.
Educational Technology Publications, Englewood Cliffs, N.J.
1979 240p.
Available from: Educational Technology Publications, Englewood Cliffs, New Jersey 07632 ($14.95)
Document Not Available from EDRS.
Document Type: BOOK (010); CLASSROOM MATERIAL (050); BIBLIOGRAPHY (131)

This book providing direction for the planning, designing, and writing of programs for computer assisted instruction (CAI) includes chapters on the role of computers in instruction, the BASIC programing language, flowcharting, terminal commands, displaying instruction, dialogues, learning theories, the process of instruction, and the planning of instruction. Each chapter contains an annotated bibliography of reference readings. The appendix provides descriptions with examples of the EDPOL, NUMB, STD-RESUTL, NS, and PEOPLE programs, which can be implemented as task management procedures in a CAI/CMI system. (CMV)

**ED186025 IR008391
Computer-Assisted Instruction in the Context of the Advanced Instructional System: Authoring Support Software. Final Report.
Montgomery, Ann D.; Judd, Wilson A.
McDonnell Douglas Astronautics Co. - East, St. Louis, Mo.
Dec 1979 88p.; Parts may not reproduce clearly.
Sponsoring Agency: Air Force Human Resources Lab., Brooks AFB, Texas.
Available from: National Technical Information Service, Springfield, VA 22151

EDRS Price - MF01/PC04 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

This report details the design, development, and implementation of computer software to support the cost-effective production of computer assisted instruction (CAI) within the context of the Advanced Instructional System (AIS) located at Lowry Air Force Base. The report supplements the computer managed Air Force technical training that is currently supported by AIS, giving the Air Force a full function computer based instructional system. In describing the interactive authoring editor, presentation program, data collection, and data print software components of the CAI system, this report indicates that the editor simplifies the authoring task by (a) eliminating the need for the author to use a computer language, (b) structuring the task, (c) providing computer-aided input, and (d) providing extensive formatting and editing capabilities. The software also provides conditional and unconditional branching that can be specified from the editor. (Author)

**ED216684 IR010162

The Development of Programming Design Guides. Final Report.
Schulz, Russel E.; And Others
Human Resources Research Organization, Alexandria, Va.
Dec 1979 28p.; For related documents, see ED 203 864-868, ED 205 202, and ED 216 684-686.
Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)

The purpose of this research effort was to develop and evaluate a prototype system-independent Programming Design Guide (PDG) for one of the 13 offline job aids previously developed for use with the Instructional Systems Development (ISD) model. This PDG is intended to provide all of the guidance necessary for a user to implement the job aid on any of a large number of computer systems. The research effort was divided into three major tasks: (1) the establishment of the content and format for Programming Design Guides; (2) the development of a guide; and (3) the evaluation of the guide. Advice is given for developing Programming Design Guides for other blocks of the ISD model. Ten references are listed. (LLS)

New Technology: Graphics

**ED218593 CS006737

The Effects of Two Levels of Microcomputer Graphics on Reading Comprehension.
Edyburn, Dave Lee
1982 52p.; M.S. Thesis, Illinois State University.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143); THESIS (042)

To gain insight into the relationship between computer graphics (computer generated visuals used for the purpose of illustrating text) and computer assisted instruction (CAI), a study examined the effects of two levels of microcomputer graphics on three measures of reading comprehension using a teacher made CAI reading program. Subjects included seventh grade students who were randomly assigned to one of two groups. Prior to the day of the experiment, students completed a scale to identify their attitudes toward computers and CAI. The treatment consisted of a textual selection programed for use on the TRS-80 color computer. All students read the identical selection as presented by the microcomputer. However, one program utilized computer graphics, whereas the other simply presented the text on the screen for the student to read. After the treatment, students were given a paper and pencil comprehension test on the reading selection and a postinstructional attitude scale. Results indicated that students using a CAI reading program with graphics did not show a greater increase in reading comprehension. Small negative correlations between the scores on the comprehension test together with treatment and with time suggest that the graphics had a slightly negative effect on the students' comprehension of the reading selection. However, the students who used the reading program with graphics showed a more favorable attitude toward CAI. (Author/HOD)

**ED196413 IR008996

Guidelines for Employing Graphics in a Videodisc Training Delivery System. ISD for Videodisc Training Systems. First Annual Report. Vol. III.

Merrill, Paul F.; Bunderson, C. Victor
WICAT, Inc., Orem, Utah.
Jul 1979 61p.; Best copy available.
Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); RESEARCH REPORT (143)

Both general and specific guidelines are proposed for the use of different types of graphics under specified conditions which would be relevant to various instructional applications of the videodisc. The general guidelines cut across several conditional variables--e.g., color, realism, motion--while the specific guidelines are directly related to the following 11 behavior categories: rule learning and using, classifying, identifying symbols, detecting, making decisions, recalling bodies of knowledge and using verbal information, performing gross motor skills, steering and guiding--continuous movement, recalling procedures--positioni-ng movement, voice communicating, and attitude learning. Also included in this report are discussions of dynamic computer graphics; the relationship of graphics to learner characteristics; graphics and the videodisc, including integration of motion sequences and still frames, ability to slow or freeze action during demonstration of procedures, and different branching strategies; the ability of the intelligent videodisc to combine the advantages of the book, television, and computer-assisted instruction; changes which the videodisc will require in current methods of media selection; and implications of this study for further research. More than 50 references are listed. (CHC)

ED169917 IR007203

The Educational Effectiveness of Graphic Displays for Computer Assisted Instruction. Final Report.

Moore, M. V.; Nawrocki, L. H.
Army Research Inst. for the Behavioral and Social Sciences, Arlington, Va.
Sep 1978 56p.
Sponsoring Agency: Office of the Deputy Chief of Staff for Personnel (Army), Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: REVIEW LITERATURE (070)

This report reviews the literature on instructional graphics and implications of the findings in terms of graphic displays for computer assisted instruction. It was concluded that assumptions about the inherent value of graphics for instructional purposes are unsubstantiated by empirical evidence, and the conditions under which the use of graphics may increase instructional effectiveness remain to be determined. Comparisons between alphanumeric and graphic displays and between different graphic representations suggest that future research should systematically explore the use of graphics as a function of task requirements, subject matter content, and learner characteristics. The research also suggests that the interpretation of research outcomes is contingent upon the dependent measures obtained and that particular attention should be given to measures of delayed retention. (Author)

ED178057 IR007799

The Instructional Effectiveness of Three Levels of Graphics Displays for Computer-Assisted Instruction.

Moore, Martha V.; And Others
Army Research Inst. for the Behavioral and Social Sciences, Arlington, Va.
Apr 1979 23p.
Sponsoring Agency: Office of the Deputy Chief of Staff for Personnel (Army), Washington, D.C.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

This study compares the effectiveness of three types of computer graphics display for computer-assisted instruction in (1) low level (boxed alphanumerics and schematics), (2) medium level (line drawings), and (3) high level (line drawings plus animations). Three groups of 30 enlisted personnel at the Engineering School and the Defense Mapping School, Fort Belvoir, Virginia, studied a computer-assisted instructional lesson on the psychophysiology of audition. Upon lesson completion, retention of four knowledge categories addressed in the CAI lesson were tested. Groups did not differ in their performance on the final retention tests or in lesson completion time. Findings indicate that the addition of more realistic and sophisticated graphics displays in a CAI lesson do not insure an increase in instructional effectiveness but point out the need to determine principles and guidelines for the use of graphics in computer-based training. (Author)

Interactive Video (Videodiscs)

ED154839 IR006039

Microcomputers and Video Disc Systems: Magic Lamps for Educators?
Braun, Ludwig
State Univ. of New York, Stony Brook.
1977 77p.
Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: RESEARCH REPORT (143)

Evaluated is the present state of development of microcomputer and videodisc technologies as they relate to education. Factors which inhibit the entry of these technologies into education are identified, and include teacher preparation, availability of courseware, and cost. Areas are identified and strategies suggested in which federal and private agencies can have a positive impact in the development and implementation of these technologies. Appendices include a list of individuals and groups contacted for information on technological development, references, and the author's relevant experience. (Author/CMV)

ED157516 IR006040

Motivations and Deterrents to Educational Use of "Intelligent Videodisc" Systems.
Eastwood, Lester F., Jr.
Washington Univ., St. Louis, Mo. Center for Development Technology.
12 Jan 1978 57p.; Best copy available
Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

The "intelligent videodisc"--a combination of advanced microprocessor, display, and storage technology--holds the potential for developing into a powerful instructional delivery system. In an inexpensive package, it could combine advanced computer-aided instruction (CAI) software power and display capability for audio, video, and textual programming. Although it is attractive technically, this system's real contribution will be that CAI will fit the institutional structure of education for the first time. In contrast to existing CAI systems, this small-scale device could be purchased locally. Another unique attribute of this technology is its potential attractiveness to consumers. Despite these advantages, this new technology will face some of the same traditional barriers that have doomed other systems. It is likely that many teachers will retain their willingness to innovate using technology. Tight budgets will remain because of the shrinking student populations and voter apathy. High cost might restrict software availability. (Author/VT)

ED153636 IR005976

The Promise and Inevitability of the Videodisc in Education
Heuston, Dustin H.
1 Sep 1977 99p.
Sponsoring Agency: National inst. of Education (DHEW), Washington, D.C.
Document Type: RESEARCH REPORT (143)

Videodisc technology carries great promise for coping with current and future educational problems, and advancements in the area of individualized instruction have proven effective in dealing with educational problems where large scale efforts based upon traditional methods have met with little success. Individualized videodisc instruction has the instructional strengths of books, motion pictures and television, and the computer. With further advancements in its technology and public use, the videodisc can become a highly cost effective method of instruction; however, government support through the funding of technological research and implementation programs is crucial for the advancement of this valuable educational resource. This paper includes descriptions of technical aspects of the videodisc, as well as brief discussions of the strengths and weaknesses of various educational technologies, cost analysis for interactive courseware, and a bibliography. (CMV)

**ED206328 IR009715

An Overview of Videodisc Technology and Some Potential Applications in the Library, Information, and Instructional Sciences.
Wood, R. Kent; Woolley, Robert D.
ERIC Clearinghouse on Information Resources, Syracuse, N.Y.
Dec 1980 37p.
Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070); ERIC PRODUCT (071)

This discussion of several of the issues and systems of videodisc technology as applied to the library, information, and instructional sciences is based upon the Utah State University Videodisc Innovation Projects. Descriptions of the major marketed videodisc systems, as well as those soon to be marketed, are given. A critique of the ABC/NEA Schooldisc Program is also included. A 72-item list of references and selected bibliography is provided, which includes references dealing with fault tree analysis (sometimes referred to as "fault free analysis") as a recommended tool to assist with the smoothing out of the diffusion process for videodiscs. Library, information, and instructional specialists are seen to be in a position to play a major role in that diffusion process. (Author/LLS)

New Technology: Microcomputers

**ED205238 JC810465

GEM. Guided Exposure to Microcomputers: An Interactive Video Program.
Anandam, Kamala; Kelly, Dennis
Miami-Dade Community Coll., Fla.
Apr 1981 12p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

In addition to facilitating computer-assisted and computer-managed instruction, microcomputers are increasingly being used to control video players in an application called Interactive Video, through which the instructor can block a video program into segments and insert textual introductions, questions, or explanations where needed. One such program, Guided Exposure to Microcomputers (GEM), was developed primarily to familiarize Miami-Dade Community College faculty with microcomputers and the potentials of interactive video programming. The GEM program requires the use of an Apple II Plus microcomputer, a television, an ETS 2000 Interactive Video Interface for Betamax with accompanying coursewriter software, and a Sony Betamax video player. As GEM explains, there are nine steps in writing an interactive video program: (1) select the videotape; (2) view the tape to determine how it should be segmented; (3) flow chart the lesson plan; (4) write the necessary introduction, explanations, and questions; (5) transfer the material to be inserted onto a screen layout form; (6) input the textual materials onto the minicomputer disk; (7) block the video tape into segments; (8) program the computer to control the sequence from video display to written text; and (9) test the program. The report outlines the topics covered in the GEM program and presents guidelines for each of the nine steps in preparing the interactive video program. (JP)

EJ189068
CAI Debut in the World of General Software
Attala, Emile
Journal of Computer-Based Instruction, 3, 4, 103-6 1977
Reprint Available: UMI

Discusses CAI as part of the general software distributed with a recently announced portable computer. A brief history of software for small computers is presented, architecture and functional capabilities of the computer are covered, and software support for CAI is described. (RAO)

EJ223569
The Role of Personal Computer Systems in Education.
Bork, Alfred; Franklin, Stephen D.
AEDS Journal, v13 n1 p17-30 Fall 1979 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); POSITION PAPER (120)

Reviews the role of computers, particularly the personal computer, in the learning process, discusses the many ways of using the computer to assist learners, and considers the advantages of personal computers over time-sharing computers. (Author/IRT)

EJ223572
Selecting Microcomputers for the Classroom.
Thomas, David B.; McClain, Donald H.
AEDS Journal, v13 n1 p55-68 Fall 1979 (Special Issue)
Reprint: UMI

Document Type: JOURNAL ARTICLE (080); NON-CLASSROOM MATERIAL (055); TEACHING GUIDE (052)

Outlines a model that will help teachers perform the prerequisite activities necessary for the specification of a microcomputer system that will meet present and future instructional computing needs. (Author/IRT)

EJ212775
Some Bases for Choosing a Computer System: Suggestions for Educators.
Braun, Ludwig
Journal of Educational Technology Systems, v8 n1 p7-30 197 1979
Document Type: JOURNAL ARTICLE (080); EVALUATIVE REPORT (142)

This guide in the selection of instructional computer systems compares four systems representing different cost categories in terms of 25 parameters. Costs and benefits of each system are enumerated, and problems associated with cost benefit analysis are discussed. (Author/JEG)

EJ214696
The Symbiosis of PLATO and Microcomputers.
Brenner, Lisa P.; Agee, C. Coe
Educational Technology, v19 n10 p45-53 Oct 1979
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141)

Presents a case for the integration of stand-alone microcomputers into the educational environment through time-sharing networks utilizing medium to large-scale central computer facilities. The PLATO system is used to illustrate the evolution of distributed processing in the computer-based education environment. (Author)

EJ189071
Utilization of Educationally Oriented Microcomputer Based Laboratories
Fitzpatrick, Michael J.; Howard, James A.
Journal of Computer-Based Instruction, 3, 4, 123-6 1977 (Special Issue)
Reprint Available: UMI

Describes one approach to supplying engineering and computer science educators with an economical portable digital systems laboratory centered around microprocessors. Expansion of the microcomputer based laboratory concept to include Learning Resource Aided Instruction (LRAI) systems is explored. (Author)

EJ189069
SAL--A Simple Author Language for a Minicomputer Assisted Instruction System
Henry, Robert D.; Howard, James A
Journal of Computer-Based Instruction, 3, 4, 107-14 1977 (Special Issue)
Reprint Available: UMI

A multimedia CAI system developed by the Navy's Systems Test Equipment Program is described. Courseware and courseware aids are presented, including Simple Author Language, which was designed to facilitate CAI program development by nonprogramming instructors. Automatic CAI program generation facilitating courseware transportability between different computer resources is reported. (RAO)

EJ189070
Maxi Authoring Languages in the Era of the Mini
Lower, Stephen K.
Journal of Computer-Based Instruction, 3, 4, 115-22 1977 (Special issue)
Reprint Available: UMI

It is argued that the need for inadequate languages, those "simplified" languages that are scaled down to the limits of the present-day small computer, will soon disappear. Utilization of an extensive language base, even if it is developed on computers exceeding the capabilities of the target minis is suggested. (Author/RAO)

ED160083 IR006242
Maxi CAI with a Micro.
Gerhold, George; And Others
Mar 1978 12p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PAPER (150)

This paper describes an effective microprocessor-based CAI system which has been repeatedly tested by a large number of students and edited accordingly. Tasks not suitable for microprocessor based systems (authoring, testing, and debugging) were handled on larger multi-terminal systems. This approach requires that the CAI language used on the microprocessor-based system either be identical to the language used on the authoring system or be a subset of that language. WTS-PILOT-BASIC, described in the appendix, is the current language combination developed and used in the system. The resulting system is available in two versions: one which implements all of WTS PILOT and BASIC with floating point, the four arithmetic operations, two-dimensional numeric arrays, and the standard set of BASIC string operations; and a full version with a complete set of scientific functions, string arrays, and disk-read and disk-write capabilities. (VT)

EJ214647
A Beginner's Guide to Microcomputer Resources.
Goldberg, Albert L.
Audiovisual Instruction, v24 n8 p22-23 Nov 1979
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); BIBLIOGRAPHY (131)

Presents a compilation of books, journals, and newsletters related to microcomputers, and a list of manufacturers of microcomputers. (Author/CMV)

**ED196416 IR009020
Microterminal/Microfiche System for Computer-Based Instruction: Hardware and Software Development.
Kottenstette, James P.; And Others
Denver Univ., Colo. Denver Research Inst.
Oct 1980 83p.
Sponsoring Agency: Air Force Human Resources Lab., Brooks AFB, Texas.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: EVALUATIVE REPORT (142); TEST, QUESTIONNAIRE (160)

The microterminal/microfiche (MT/MF) system described is part of a continuing effort to investigate the feasibility of a low-cost, stand-alone device for the delivery of the testing component of technical training in a computer-based instructional (CBI) environment. A description of the hardware for the system includes the basic microterminal configuration, component modifications, and MT/MF interface description and operation. The development of software for progression testing support and microfiche control is also described. The MT/MF was evaluated using three experimental groups and one control group in a Precision Measuring Equipment Course at Lowry AFB. Three major areas of concern were evaluated: (1) whether the use of the microterminal had a positive effect on test-taking behavior, (2) whether the MT/MF system would have an inhibiting effect on student performance reflected in either block score or test taking time, and (3) the effect of student attitudes. The findings indicate that the microterminal is a preferred technology for the recording of answers to test items in a CBI environment, and that the use of microfiche for the presentation of test items does not impose any problems for students in terms of their ability to perform. Results are reported with supporting tables and questionnaire summaries. (CHC)

ED160082 IR006241
A Microprocessor Based CAI System with Graphic Capabilities.
Mabry, Frank J.; And Others
Mar 1978 19p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PAPER (150)

This paper describes a system which operates on an independent basis as well as connected to communications network, e.g., PLATO and ASCII based communication systems. The system also has facilities for local production and use of PILOT lessons, for support of a generalized programming language (NSBASIC), and for development of graphic sequences. The following topics are discussed: background, NSBASIC, microprocessor-supported PILOT, graphic source generation, sized writing and user defined special characters, and programming support. A description of the hardware features is appended as well as the language guide, programming notes, and programming options for NSBASIC. (VT)

ED178054 IR007796

A General Introduction to Microcomputers.

Muiznieks, Viktors

Illinois Univ., Urbana. Dept. of Secondary Education

Nov 1978 19p.; The Illinois Series on Educational Applications of Computers, No. 26; For related documents, see IR 007 782, IR 007 845, and ED 142 199.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This basic introduction to microcomputers provides the neophyte with the terminology, definitions, and concepts that explain the microcomputer and computing technology in general. Mathematical operations with binary numbers, computer storage, controlling logic, and the concepts of stack and interrupt are explained. (RAO)

EJ214695

Programming Languages for Microprocessor Courseware.

Schuyler, James A.

Educational Technology, v19 n10 p29-35 Oct 1979

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); INSTRUCTIONAL MATERIAL (051)

Suggests criteria for choosing a programing language in courseware development. Authoring languages (PILOT, TUTOR, BASIC, and PASCAL) are compared; driver programs' compilers and interpreters are discussed; and the tasks of an authoring system are presented. (RAO)

A Selected List of Persons and Centers Active in Microcomputer Usage for Education.

Educational Technology; v19 n10 p67 Oct 1979 (Not listed in CIJE)

Lists 13 people known to be actively working with microcomputers who can be contacted to learn about current applications in several subject areas.

Microcomputers in Education: A Selection of Introductory Articles.

Sledge, D., Comp.

London: Council for Educational Technology.

1979

Available from CET, 3 Devonshire St., London W1N 2BA (2 British pounds) (Not listed in RIE)

The 14 articles included in this publication give a general introduction and provide background reading on microcomputers in education. Aspects covered include the nature of the microcomputer, its management and potential uses; types and capability of equipment; purchase and running costs; various languages; and available software.

New Audiences: Adult, Off-Campus Learners

**ED206868 CE029977

Alternative Education Models—Preliminary Findings of the Job Corps Educational Improvement Effort. Education and Training Approaches. Youth Knowledge Development Report 5.2.

Argento, Barry J.; And Others

Employment and Training Administration (DOL), Washington, D.C. Office of Youth Programs.

May 1980 266p.; Some tables will not reproduce well due to small print. For related documents see note of CE 029 968.

Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (Stock No. 029-014-00162-7, $6.50).

EDRS Price - MF01/PC11 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)

This volume is one of the products of the knowledge development effort implemented under the mandate of the Youth Employment and Demonstration Projects Act of 1977. This interim report describes the background and structure of the Educational Improvement Effort (EIE) of the Job Corps, as well as the preliminary findings for the first cohorts of participants and controls in the models of EIE implemented earliest. The EIE follows a logical sequence, beginning with a survey of the varying teaching methods and policies within Job Corps centers as well as a review of past evaluation literature. Cooperatively with the education community, exemplary education approaches outside Job Corps were assessed for applicability for disadvantaged youth in a center environment. The most promising models were then implemented and Job Corps members were randomly assigned to the models and to traditional Job Corps offerings. Assessment of both types of programs yielded findings that are remarkable if they hold up over time. The tested gain rates of Corpsmembers in regular programs exceed both public school averages and the lower learning rates previously achieved by the Corpsmembers in school. The gain rates also exceed those documented for Job Corps in the past. The evidence on the relative effectiveness of traditional and innovative approaches is limited now, but it does appear that some alternatives are promising, particularly computerized instruction. It is clear that the individualized, self-paced instructional approach used in Job Corps can positively affect learning rates of even the most disadvantaged youth. (KC)

ED150320 CE014465

CADE—A System for Computer-Assisted Distance Education: Development, Design, and Evaluation of the System.

Baath, John A.; Mansson, Nils-Ove
Hermods School, Malmo (Sweden).
Apr 1977 62p.; Appendexes may reproduce poorly
Sponsoring Agency: Swedish Board of Technical Development, Stockholm.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A three-stage, computer-assisted distance education (CADE) project was undertaken to design a prototype of CADE that would improve the two-way communication in correspondence education in three respects: (1) the quality of the tutors' comments as to feedback effectiveness and motivational aspects, (2) the turn-round time of students' solutions to assignments, and (3) the quality of assignments. In the first two stages of the development work, the parts of the computer-assisted correspondence instruction were simulated by means of an optical reader and an operator at an automatic typewriter. The third stage involved developing and evaluating a real computer-assisted distance tutoring system and studying experimentally the effects of explicitly informing part of the students about the role of the computer in the teaching system. The final outcome is a system where the students' solutions are corrected by an optical reader. The results are analyzed by a computer which types out individualized comment letters to the students. The results of evaluating the system include the following: (1) Practical experience of the functioning of the system has been very positive, and (2) student responses to questionnaire items were positive regarding the answer forms, the turn-round time, the use of multiple choice as compared to traditional questions, and feedback comments. (EM)

ED153768 RC010492

Native Students Services. Fourth Evaluation Report, 1976-77.

Brooks, Ian R., Comp.; Moore-Eyman, E., Comp.
Calgary Univ. (Alberta). Office of Educational Development.
1977 136p.; For related document, see ED 129 545; Formerly the Indian Students University Program Services
Sponsoring Agency: Donner Canadian Foundation.
EDRS Price - MF01/PC06 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The Native Students Services (formerly the Indian Students University Program Services) provided support and tutorial services and outreach programs to Indian students. During the 1976-77 program year, the basic plan of operation developed during the preceding four years was continued. Students came from all parts of the province, from north of Slave Lake to the Blood Reserve on the southern border of the province. Six more students graduated this year, including the first of the Outreach students. The Outreach Program included three years of University of Calgary courses taught on a reserve with the fourth year courses taken on the University campus. This publication presents the reports of the academic coordinator and the tutor/counsellor on the students' progress and the improvements of the Native Students Services; an account of the interviews conducted to evaluate the third year program for students from the Stoney Reserve and from Calgary who participated in an inter-cultural program at Morley; and detailed reports of the projects of the Office of Educational Development. The various reports discussed program funding, advisory committee, staff, student enrollment and academic achievement, facilities, course load, tutor/counselling services, the Achievement Test for Indian Children, the Computer Assisted Learning Project, the Compendium of Native-Oriented Education and Employment Training Programs, and a preliminary study of the locus of control in Canadian Indian children. (NQ)

**ED197202 CE027849

Pilot Project in Computer Assisted Instruction for Adult Basic Education Students. Adult Learning Centers, The Adult Program, Great Neck Public Schools, Great Neck, New York. Final Three Year Report (2/77-6/79).

Buckley, Elizabeth; Rauch, David

Great Neck Public Schools, N.Y.

1979 58p.; Some tables will not reproduce well due to small print.

Sponsoring Agency: New York State Education Dept., Albany. Bureau of Basic Continuing Education.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: EVALUATIVE REPORT (142); RESEARCH REPORT (143)

A three-year study evaluated the cognitive and affective effects of computer-assisted instruction (CAI) on adult basic education (ABE) students at the Great Neck Adult Learning Centers. The system was used by learning laboratory students in 1977 and by both learning laboratory and classroom students from 1977-1979. The 100 students enrolled from 1978-1979 used CAI regularly as a core part of their study. The curriculum in the drill and practice program consisted of Adult Reading Skills, Adult Arithmetic Skills, and Adult Language Skills I and II. It was based on mastery learning and ranged in level from third through seventh grade. The study used an experimental-control group design containing three elements: (1) comparison of growth on California Achievement Test in reading and mathematics, (2) comparison of time spent in program, and (3) examination of students' attitudes toward learning and use of CAI. Staff and student reactions concerning use were uniformly positive. Third-year and three-year studies' results confirmed that use of CAI led to significant cognitive and affective growth. In structure and design CAI seemed an effective supplementary learning medium for ABE students. Changes were indicated in curriculum scope and system capability. (An analytical summary precedes the general report.) (YLB)

**ED218947# FL013007

Learning Characteristics of the Disadvantaged: Implications for CAI Lesson Design (Helpful Hints for Computers and Other Teachers).

Campanini, Susan

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p214-24 Spr 1981

1981 11p.

Available from: Not available separately, see ED 218 930.

Document Not Available from EDRS.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Ideas for designing computer-assisted instruction (CAI) lessons that take into account the learning characteristics of disadvantaged adult students are examined, based on experiences with students who undertook a series of PLATO lessons in preparation for the GED (high school equivalency) exam. The students, who ranged in age from 18 to 60 years old, were largely unemployed and poor, and most lived in the black community. While they enrolled in the program voluntarily, many had a history of negative experiences with previous schooling and very low opinions of their own learning abilities, and many had limited reading skills. Since interest in an academic area can be promoted by student interest in certain topics, it is suggested that topic preferences might be determined prior to a CAI lesson on reading comprehension. Individual preference data can also be used for individualized branching to passages and for feedback on responses to questions. Especially important to developing motivation of these learners is the use of supportive feedback in on-line messages that give partial credit and are worded positively, and also provide constructive, answer-specific information for correction. A guiding principle for using CAI lessons to uncover and correct information deficits is an awareness of the nature of the tasks that the lesson teaches and/or tests. The need for help in making connections and perceiving associative structure suggests the importance of explicit instructions in CAI lessons. In regard to reading comprehension deficits, CAI lessons can help in individual diagnosis and collection of individual student data for selecting new readings and help units and for branching to exercises. The benefits of having a passage displayed with one sentence added at a time under student control are noted. (SW)

ED180438 IR007905

Viewdata, Prestel, Teletext: Home TV and Scitel Science Magazine.

Cawkell, A. E.

1978 15p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070)

This paper describes the development of textual information displays for home consumption on modified television receivers in Great Britain over the last few years, compares two systems in use there--Teletext and Viewdata--and discusses some future possibilities for such services in the U.S. as well as the U.K. British television equipment manufacturers are actively considering the connection of home computers to receivers which contain microprocessors to provide the reception of computer programs broadcast via the Teletext and Viewdata systems. A program, stored for as long as it may be needed in the receiver's existing page storage, is executed by the microprocessor, and the TV screen is used for display. Such an arrangement would enable a viewer to run-in whatever program he/she needs. Concurrently, the full power of access to very large information files via Prestel telephone service would be available to the viewer using the same all-purpose terminal. (Author/CMV)

ED160077 IR006236

The Lister Hill Center Plasma Terminal System and Implications for Medical Networks.

Goldstein, Charles M.; Ford, William H., Jr.

Mar 1978 16p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

The Lister Hill National Center for Biomedical Communications has supported a program to develop a Plasma Terminal System for purposes of improving the effective delivery of computer based educational materials. This system, employing recent advances in microprocessing and storage technologies, will provide new alternatives for present users of computer assisted instruction networks. This paper presents an overview of the Plasma Terminal System, and discusses some implications for medical networks. (Author)

ED121281 IR003258

The Development and Utilization of Mobile CAI for the Education of Nurses in Remote Areas.

Hall, Keith A.

Pennsylvania State Univ., University Park. Computer-Assisted Instruction Lab.

Apr 1976 11p.; Paper presented at the Annual Meeting of the American Educatonal Research Association (San Francisco, California, April 19-23, 1976)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

In providing for inservice nursing educational opportunities, the obvious advantages of the computer-assisted instruction (CAI) mobile system are its inherent interactive quality and the flexibility of scheduling made available to those who are already working in a field. The rationale for the development of the system is based on the past and continuing success at Pennsylvania State in retraining inservice teachers via mobile CAI. Preliminary followup evaluation results have shown that teachers find the content useful and the delivery system very adaptable to their needs and would be willing to take additional courses by CAI. It is estimated that a single mobile van can facilitate 1,5000 three-credit course completions annually at a cost of approximately $60 per course or $20 per credit hour for a fully amortized computer and mobile laboratory. (Author/JY)

ED134234 IR004462

Interactive Computer-Based Education for Satellite Application.

Hall, Keith A.; Mitzel, Harold E.

Dec 1976 60p.; Paper presented at the Conference on Educational Applications of Satellites (Arlington, Virginia, February 2-3, 1977). For related documents, see IR 004 458- 468

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: CONFERENCE PAPER (150)

This paper describes a narrow-band satellite application for facilitating a Computer-Based Education Utility (CBEU). A review of computer uses in education is presented with an emphasis on interactive computer applied to instructional processes. An example of major use of the CBEU focuses on meeting the educational needs of handicapped children, first by inservice teacher education followed by direct instruction to handicapped children via CBEU. A plan is presented to provide a flexible "on-the-job" CBEU with a curriculum enabling inservice elementary teachers to learn how to teach mildly handicapped children. It would also create the opportunity to expand the curriculum for practicing teachers into other needed skill areas and eventually provide direct instructional service to handicapped children. A selected bibliography is also provided. (Author/WBC)

ED158741 IR006299

Continuing Health Education Through Computer Technology.

Held, Thomas H.; Kappelman, Murray M.

1976 11p.; Paper presented at the Health Education Medical Conference (Miami, Florida, 1976)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Computer assisted instruction is beginning to have an important role in the rapidly expanding field of continuing education for health science professionals. At the present time, there are 22 medical specialty boards, all of which require or are about to require some form of continuing medical education for re-certification, and studies are being conducted throughout the country to determine the feasibility of using computer based education for obtaining continuing education credits in the health sciences. Computerized clinical case simulations, which offer some interesting advantages over traditional forms of continuing education, can be accessed from Massachusetts General Hospital and Ohio State University on a 24-hour basis. The Health Education Network offers courseware to medical, nursing, and dental schools, hospitals, and health care institutions throughout the U.S. and Canada. The prospects of using computer technology to obtain continuing health education credit are very real and feasible compared to other means--the costs are reasonable, accessibility to computer based education systems is increasing, and the quality and quantity of computerized case simulations are rapidly improving. (Author/CMV)

ED139455 JC770274

Instruction for Distant Learners Through Technology.

Kelly, J. Terence; Anandam, Kamala

Jun 1977 16p.; Paper presented at the International Conference on Improving University Teaching (3rd, Newcastle-upon-Tyne, England, June 8-11, 1977)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Miami-Dade Community College's Open College allows students to enroll in classes, purchase course materials, and proceed through coursework at their own pace without having to go to a campus except for course examinations. Three major components of the distant learning program are audio, video, and print materials which are used in conjunction with a two-way, computer-based communication system. This system permits faculty/student dialogues in a written mode. A distant learning student responds to a faculty-designed questionnaire which assesses the student's progress at strategic points along a course of study, in both the cognitive and affective domains. Based on the responses obtained, a letter is returned to the student which contains an individualized "prescription for learning". The prescription, formulated by the instructor and transmitted to the student via computer, is based on the student's unique educational strengths and needs. As a result of this process, impersonal materials are utilized to deliver personalized instruction. Additionally, the student is able to act as the principal initiator of learning. A graphic model of the distant learning program is included as is a flow chart depicting the operation of the computer-based instructional program. (JDS)

**ED218039 RC013442

Computer-Assisted Audiovisual Training Methods for Rural Staff Development Programs.

McNeece, C. Aaron

Jul 1981 10p.; Paper presented at the National Institute on Social Work in Rural Areas (6th, Beaufort County, SC, July 26-29, 1981).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)

The state-of-the art review suggests that human services agencies in rural areas can provide adequate staff training through the use of high technology training systems. Training equipment discussed includes: videotapes, microcomputers for computer-assisted instruction (CAI) or computer-managed instruction (CMI), solenoid-operated videocassette recorders coupled with computers, and the advantages of videodiscs for CAI and/or CMI. Results are reported from a 1979 survey of 400 companies which revealed that microcomputers for training could be successful and cost effective when: (1) the training problem was delineated and investigated before a computer system was advocated; (2) applications were individualized for learner needs; (3) projects were integrated with a larger educational environment; (4) training was integrated into the work environment; and (5) training programs were interactive with the student. Also provided is a description of the Florida Title IV-A Project, which is developing staff training packages and purchasing high technology training equipment to be used to upgrade the knowledge and skills of public service workers. It was concluded (from lessons learned thus far from the Project) that agency training staff must be thoroughly convinced of the advantages of using high technology equipment for it to be successful. (AH)

**ED207428 HE014355

Technology in Higher Education: Does It Really Improve Accessibility and Quality and Cost Less in the Long Run?

Muzzin, Linda J.
Mar 1981 30p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Issues pertaining to the application of educational technology in higher education are considered. Educational technology has been applied successfully in reaching the geographically remote in several jurisdictions, including Canada, and it has been important in giving adults a second chance at a university education. Claims have been made that it also can reach the psychologically remote (i.e., the unmotivated). To increase accessibility to higher education, Canadian universities have offered to a limited extent courses via broadcast television or videotape. An alternative to off-campus centers and television courses for the geographically remote is the correspondence course. Other techniques include telephone networks and the audiotape cassette. Britain's Open University was the prototype for making university level work accessible to those who missed their first chance to attend. Views concerning the application of electronic programmed learning to reaching the unmotivated and potential dropouts are addressed. It is suggested that while there have been numerous demonstrations at various North American and European centers that the application of technology in higher education can be used to reach some of those who have been traditionally excluded. Serious questions remain about whether the quality of programs is improved by the application of technology, whether innovation of this type is possible except in a few centers, given the resistance by many conventional institutions. A bibliography is appended. (SW)

**ED192119 CE026682

Trio for Youth. Three Employment and Training Programs.

Employment and Training Administration (DOL), Washington, D.C.
Sep 1979 17p.; Photographs and sections of small type will not reproduce well.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

These three articles describe three programs operating under the Youth Employment and Demonstration Projects Act (YEDPA), a comprehensive endeavor to lower the high rate of joblessness among youth. The first article focuses on the Youth Incentive Entitlement Pilot Projects--popularly called Entitlement--which is an experimental and intensive program. It discusses this first large-scale effort to guarantee employment to a population segment which actively addresses itself to linking education and work. The second paper gives an account of the success of the Job Corps college program through its Advanced Career Training (ACT) program at colleges and postsecondary vocational institutions. The third article presents the story of Baltimore's Learning Works, an example of how a community benefits from a partnership formed by the government and the private sector. It discusses the use of PLATO (Programmed Logic for Automatic Teaching Operations), a teaching computer, by educationally disadvantaged clients to finish their education and learn job search skills. (YLB)

**ED190067 IR008544

Computer-Assisted Literacy Instruction in Phonics.

Wisher, Robert A.
Navy Personnel Research and Development Center, San Diego, Calif.
Apr 1980 25p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

This report details the research and development effort to examine the feasibility of teaching the phonics segment of the Navy's Academic Remedial Training program by computer driven voice synthesizer. The criterion for feasibility was that the computer-assisted course produce ART graduates who read as well as students who receive a comparable amount of classroom phonics instruction. Twenty-four students were given the special instruction on a multimedia system that included a minicomputer, viewing consoles, response entry keyboards, and a voice synthesizer. When compared to the control group, the students in the computer-assisted course did as well as those in the classroom, but no better. The 24 subjects were then integrated back into the classroom group where they performed as well in the remainder of the course as their fellows in the control group. Since student performance in the CAI program produced a match, the phonics segment of the ART program is a success and is a candidate for automation. (Author/RAA)

New Audiences: Business and Industry

**ED186028 IR008396

Uses of Individualized Instruction in Training by "High-Technology" Firms in the San Jose, California Area.

Hailer, Harvey A.
30 May 1979 108p.; Master's Thesis, San Jose University.
EDRS Price - MF01/PC05 Plus Postage.
Document Type: THESIS (042); REVIEW LITERATURE (070)

A literature review was conducted to examine the current status, advantages, and cost-effectiveness of individualized instruction in industrial training in over 30 companies and training specialists in 11 electronics and computer-related firms were interviewed to determine the current use of individualized instruction in employee training programs. Media utilization, instructional development methods, general trends, and predictions for future training methods in these companies were also examined and compared. Results indicated that in-house training is growing in importance as a result of a shortage of experienced staff; feedback, evaluation, and revision are the weakest aspects of instructional design schemes used in the electronics industry; training of manufacturing skills will increase rapidly and use individualized instruction extensively; and individualized instruction, which is cost-effective and useful in handling problems created by geographic dispersal of employees, is a medium of high potential growth for training in technical subject matter. Appendices include the interview instrument; a list of firms in the San Jose area involved in electronics, computers, and related equipment with over 500 employees; an interview with a firm's training coordinator; and a list of the firms interviewed. (CMV)

**ED207598 IR009717

The Use of Microcomputers for Training: Business and Industry.

Kearsley, Greg; And Others
Human Resources Research Organization, Alexandria, Va.
Mar 1981 10p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Training directors or managers of 160 major corporations of the "Fortune 500" were surveyed to assess the scope of computer use in the training domain; information was received from 56 of the companies. The study focused on five major areas: training applications, hardware, software, courseware, and number of students involved. An analysis of the data collected indicates that (1) the use of computer-based training (CBT) is becoming more commonplace in business and industry; (2) technical skills and management training are the most common uses; (3) the APPLE II is the most prevalent microcomputer in use; (4) software/courseware is primarily internally developed; (5) simulation is the most common instructional strategy used; (6) many of the efforts involve large numbers of employees; and (7) some companies are adopting a phased approach to the integration of CBT. Examples of microcomputer-based training projects in several corporations are described. Future prospects in microcomputer-based training are also discussed, e.g., the use of videodisc, videotext and videoconferencing services, and embedded training. Seven references are listed. (CHC)

New Audiences: Handicapped Learners

**ED198791 IR009106

A Multi-Media CAI Terminal Based upon a Microprocessor with Applications for the Handicapped.

Brebner, Ann; Hallworth, H. J.

Apr 1980 10p.; Paper presented at the Annual Convention of the Association for Educational Data Systems (18th, St. Louis, MO, April 13-16, 1980). For a related document, see IR 009 107.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150) Geographic Source: Canada; Alberta

The design of the CAI interface described is based on the microprocessor in order to meet three basic requirements for providing appropriate instruction to the developmentally handicapped: (1) portability, so that CAI can be taken into the customary learning environment; (2) reliability; and (3) flexibility, to permit use of new input and output devices as they are required and become available. The precise configuration of the terminal is determined by its use, and a number of special features are available, e.g., double size characters for use by the partially sighted, special graphic characters, animation, color, synthetic speech, and control of a random access slide projector. Input devices that may be used include a number pad, light pen, and touch sensitive display. Special devices for students with physical handicaps include the POSSUM apparatus, which may be controlled by a variety of binary switching devices, and the POSSUM Expanded Keyboard, both of which have been used by cerebral palsied students. Other special keyboards are designed to simplify the coding required for response, e.g., the "money" keyboard for social arithmetic problems. The terminal has also been developed into a stand-alone computer for use in areas without access to a host computer. (CHC)

**ED202707 SE035005

Calculators and Microcomputers for Exceptional Children.

Etlinger, Leonard E.; Ogletree, Earl J.

1981 9p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141)

The potential of using calculators and microcomputers successfully with exceptional children is addressed. This document features specific devices and models when referring to applications of calculators in the classroom. For the exceptional or handicapped student, calculators are viewed as the "least restrictive" learning device; which are destined to become more prominent in the classroom. The microcomputer is viewed as a device of the future, which appears to have great potential for adaptability. Currently available software functions and innovative devices such as speech synthesizers are noted, but no particular brands or models are described. The document concludes with a list of five ways calculators and/or computers can benefit students. The reasons listed are: (1) reinforcing the basic skills; (2) helping in the basic skills of reasoning; (3) reinforcing problem solving ability; (4) promoting logical thinking; and (5) encouraging creativity. (MP)

**ED215884 SE037077

Using Calculators and Microcomputers with Exceptional Children.

Etlinger, Leonard E.; Ogletree, Earl J.

1982 17p.; Contains occasional light and broken type. Portions of this document taken from ED202707.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Language: English Document Type: GENERAL REFERENCE (130); PROJECT DESCRIPTION (141)

The focus of this document is on descriptions of calculators, microcomputers, and related educational technology and materials. Calculators are viewed as innovative teaching tools that can have both practical and pedagogical functions in the classroom to enhance understanding and achievement in mathematics. Microcomputers are seen as glorified calculators, that may replace calculators since they perform calculator functions and are additionally easily programed to store and retrieve specific data, ask questions, and evaluate and report students' responses. A comparative list of features of some of the most popular microcomputers is provided. The report concludes by noting that calculators and microcomputers can benefit students by: (1) reinforcing the basic skills,; (2) helping in basic reasoning skills; (3) reinforcing problem-solving ability; (4) promoting logical thinking; (5) encouraging creativity; (6) developing concentration and independent learning; (7) broadening technological experiences; (8) providing stimulation and motivation; (9) developing mapreading skills; (10) helping to develop number sequencing concepts; (11) aiding in discovering mathematical concepts; and (12) developing music skills. (MP)

ED138929 CS003382

Initial Reading through Computer Animation.

Geoffrion, Leo D.; Bergeron, R. Daniel

Apr 1977 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, New York, April 1977)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

The Computer Animated Reading Instruction System (CARIS) was developed to introduce reading to children with varied sensory, cognitive, and physical handicaps. CARIS employs an exploratory learning approach which encourages children to experiment with the reading and writing of words and sentences. Brief computer-animated cartoons provide the child with visual feedback of the meaning of sentences constructed by the child. Pilot experiments show that children with varied learning handicaps can develop beginning reading skills through use of this system. The possible implications of such systems to current models of reading readiness and psychometric testing are briefly mentioned. (Author)

**ED211044 IR009841

The PLATO PPTK System: An Alternative Keyboard Using the PLATO Computer-Based Education System for the Orthopedically Handicapped.

Goodman, William J.

Illinois Univ., Urbana. Computer-Based Education Research Lab.

1980 50p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

Developed in response to the complex problems involved in providing equal educational opportunities for the intellectually alert orthopedically handicapped, the PLATO Programmable Terminal Keyset (PPTK) system makes the resources of PLATO compatible to the functional problems of a wide range of orthopedic conditions. This report describes the operational characteristics of the system, as well as the versatile range of applications for providing a high quality educational opportunity for severely orthopedically handicapped students. Nine references are listed. (LLS)

**ED198792 IR009107

CAI for the Developmentally Handicapped: Nine Years of Progress.

Hallworth, H. J.; Brebner, Ann

Apr 1980 23p.; Paper presented at the Association for the Development of Computer-Based Instructional Systems (Washington, DC, March 31-April 3, 1980). For a related document, see IR 009 106.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Initiated nine years ago by the University of Calgary Faculty of Education Computer Applications Unit in cooperation with the nearby Vocational and Rehabilitation Research Institute (VRRI), this project uses computer assisted instruction (CAI) to teach social and vocational skills to developmentally handicapped young adults, many of whom also have physical handicaps. The teaching of social arithmetic and reading has necessitated the use of multi-media terminals, and several such terminals have been developed and used; the current model, based upon a microprocessor, can be adapted to the needs of the individual learner through a variety of input and output devices. Principles derived from research on learning among the retarded have been used to design two program continua aimed at enabling trainees to acquire some of the social skills needed for independent living in the community. Special input devices enable the physically handicapped to communicate more easily with the computer, and "concept keyboards" assist the retarded by reducing the amount of mental recoding required. The success of this project, now an integral part of the VRRI program, is leading to further use of CAI at the institute and in other centers. (Author/BK)

**ED210849 EC140649

Placement and Programming.

Hicks, Doin E., Ed.; And Others

Gallaudet Coll., Washington, D.C.

Directions, v2 n4 1981

1981 72p.

Available from: Directions, Box 5664, Washington, DC 20016 ($10.00 per year, $3.50 single copy).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: SERIAL (022); REVIEW LITERATURE (070)

The issue of Directions contains 10 articles which address the question of what, besides the legal mandate, does it take to make placement and programing work for hearing impaired individuals.

Entries include the following titles and authors: "The IEP (individualized education program) and Deaf Children" (M. Deninger); "The Deaf Child and the Unwritten Curriculum" (M. Garretson); "Who Are the Deaf Children in Mainstream Programs?" (M. Karchmer, R. Trybus); "Mainstreaming--A National Perspective" (F. Corbett, Jr.); "Special Problems of the Deaf under the Education for All Handicapped Children Act" (D. Large); "Usability and Hearing Impairment" (J. Newby); "Barrier-Free Educational Environments for Hearing-Impaired Individuals" (C. Hawkins-Shepard, T. Lillis); "A Comparison of the Effects of Fixed and Variable Ratio Schedules of Reinforcement" (R. Van Houten, P. Nau); "Materials and Program Suggestions for Hearing-Impaired Children" (L. Gilbert); and "Computer Applications for the Deaf and Deaf-Blind" (K. Casey). (SB)

**ED212101 EC141504

Computer Assisted Instruction for Teaching Basic Money Handling Skills to Mentally Handicapped Students at Christine Meikle School in Calgary.

Holz, Else; And Others
Alberta Dept. of Education, Edmonton. Planning and Research Branch.
30 Apr 1979 44p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

The study involving 32 trainable mentally handicapped students (7 to 20 years old) investigated the effectiveness of computer assisted instruction (CAI) in teaching the necesary arithmetic skills for handling small amounts of money. Equipment used consisted of a Cathode Ray Tube (CRT) terminal interfaced with a random access slide projector, and a hard copy teletype terminal. Courseware consisted of a series of computer programs organized into four models (numeral recognition, counting to 99, simple addition, coin recognition), each of which dealt with a concept necessary for successful handling of coins up to 99 cents. Although the modules followed a sequential developmental design, it was not necessary for a student to complete one module before advancing to the next. Results showed that while learning took place for both the study and control groups, the difference was statistically significant for the study group. (Author/SB)

**ED216687 IR010165

Computer-Assisted Handwriting Instruction and Visual/Kinaesthetic Feedback Processes.

Lally, Mike
Mar 1981 19p.; Paper presented at the Conference on Research in Mental Retardation and Developmental Disabilities (14th, Gatlinburg, TN, March 1981).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142); CONFERENCE PAPER (150)

A research study was conducted to determine the effectiveness of using computer assisted instruction (CAI) to teach handwriting. Designed to take advantage of the computer's facility to rapidly transfer large amounts of precise data, the handwriting program used a computer-connected pen as the interface between learner and machine. Nine boys between 9 and 16 years of age from a special school in Canberra were selected to participate in the study based on the poor quality of their handwriting. Each student attended four 20-minute individual sessions per week in which instruction in handwriting was given using computer equipment, and results indicated that positive results did occur using this technique. One important implication of the data collected from the study was that it was not the use of computers in the instruction process per se which produced significant gains in learning, but rather it was the way in which this instruction was structured. Five references are listed. (LLS)

**ED208617 EC140065

Analysis of Alternative Management Information Systems Appropriate for Special Education Application.

Larson, Harry J.; And Others
Decision Development Corp., Walnut Creek, Calif.
1981 75p.
Sponsoring Agency: California State Dept. of Education, Sacramento.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

The report covers three interrelated studies which pertain to the utilization of computer based management information systems in reporting special education data to the state and federal governments. Two of the studies reflect certain aspects of actual computer use by California school districts and county offices of education, and the third study deals with the development of a data element dictionary based on special education reporting requirements reflected in state and federal report forms. Chapter 1 provides an introduction while Chapter 2 outlines procedures for each of the three studies. Results are reported in a third chapter and include such findings as that about two-thirds of the respondents reported computer availability through either ownership, rental, purchase of computer services, or a combination of these; and that districts currently without computer services do not have a positive view of the use of computers in education. Appended materials include sample survey forms, a copy of the Information System Opinionnaire, and record forms. (SB)

**ED217677 EC'42765

Colorado Technology Workshop. Technology and Service Delivery. Implementation Training for Colorado-PAACO-01-03.

Latham, Glenn; Bahen, Dennis

Utah State Univ., Salt Lake City. Intermountain Plains Regional Resource Center.

Feb 1982 31p.

Sponsoring Agency: Office of Special Education and Rehabilitative Services (ED), Washington, DC.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); NON-CLASSROOM MATERIAL (055)

The proceedings of a 2-day 1982 conference on the use of technology in the education of handicapped students covers advantages, disadvantages, uses, available formats, costs, expertise needed, and suppliers of videotape technology, audio teleconferencing, educational television and radio, microcomputers, videodiscs, satellite technology, and instructional packages and modularized instruction. Each section includes a list of references. The report concludes with a list of 20 producers of special education materials. (CL)

**ED216500 EC142454

Information Prosthetics for the Handicapped. Final Report.

Papert, Seymour A.

Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

Jan 1981 39p.; Print is variable and may not reproduce well in hard copy.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

The paper describes the successful use of the LOGO System (an interactive graphics, computer based learning environment) with 12 severely physically handicapped adolescents with cerebral palsy. Five goals were set forth concerning the opportunity to work with microcomputers in interesting ways, the assessment of the students' spatial competence, consequences of lack of experience in language production, the LOGO system's potential human and social consequences, and the need to document this impact for dissemination. The LOGO classroom setup is described as are activities undertaken, including business programing using mathematics, work on spatial deficits, remedial writing, and diagnostic efforts using graphics and seriation tasks. It is explained that the system also allowed for visual experience of shapes and spatial configurations. The system is said to have resulted in significant improvement in the sense of personal worth. (CL)

**ED204913 EC133380

Proceedings of the 1980 Institute for Public School Personnel Serving Visually Impaired Students (May 4-6, 1980).

Michigan State Dept. of Education, Lansing.

May 1980 62p.

Sponsoring Agency: Office of Special Education (ED), Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

The proceedings of the 1980 Institute for Public School Personnel Serving Visually Impaired Students in Michigan contains the transcripts of 11 presentations. The introduction lists objectives of the institute including providing participants with information on the role of the Michigan School for the Blind, new instructional materials and programs, the availability of orientation and mobility specialists in Michigan, and the new Michigan Special Education rules. Papers have the following titles and authors: "An International Perspective" (D. Heiner, C. Rottman); "The Visually Impaired Child: A National Overview" (J. Scandary); "The Media Center" (J. Nicol, et al.); "Ohio Resource Center for the Visually Impaired" (J. Todd); "PATTERNS: The Primary Braille Reading Program" (H. Caton); "New Developments in Social Studies and Science Instructional Materials for Mainstreamed Visually Impaired Students" (G. Scholl); "Computer-Based Instruction in Graphic Skills for the Visually Impaired" (I. Macleod, J. Jackson); "The Commission for the Blind" (P. Peterson); "P.A.M.

(Physically Impaired Association of Michigan) Assistance Centre" (A. Ensign); "Stress" (L. Brooks); and "Planning the Perfect Professional Development Program" (P. Vedovatti). Appendixes contain the evaluation report of the institute, 1980 priorities for public school personnel serving visually impaired persons in Michigan, and names and addresses of presenters and participants. (DB)

**ED200227 IR009261

Videodisc: An Instructional Tool for the Hearing Impaired.

Propp, George; And Others

Nebraska Univ., Lincoln.

1980 43p.

Sponsoring Agency: Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C. Media Services and Captioned Films Branch.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

The strong potential of videodisc technology for improving the education of the hearing impaired is described in this report on the Media Development Project for the Hearing Impaired (MDPHI) at the University of Nebraska. The topics covered include: (1) the history of the use of technology in deaf education; (2) the history of videodiscs and their capabilities; (3) a comparison of the optical and capacitance systems of videodiscs; (4) an overview of the systems currently being produced; (5) a description of the instructional design, development, and evaluation efforts carried out by MDPHI on videodisc technology for deaf education; and (6) the production techniques used to edit and caption videodiscs. Extensive bibliographies are included after each chapter. (BK)

ED173983 EC114963

Computer Assisted Applications for Learning with Special Needs Children.

Sandals, Lauran H.

Apr 1979 26p.; Paper presented at the Meeting of the American Educational Research Association; Not available in hard copy due to marginal legibility

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

The paper presents a brief study of the use of computers for instructional purposes with 875 handicapped children; and appendixes list a mathematics skills hierarchy, a language arts hierarchy, excerpts from student reports, and abstracts of studies of computer assisted learning with physically handicapped, learning disabled, and deaf children. Results of the study presented suggest that there are many positive advantages to computer assisted instruction for handicapped children including subjective behavioral advantages demonstrated by the improved attitude of Ss and their peers (who are in charge of proctoring many of the systems). (PHR)

ED162466 EC112509

The Effects of CATTS' Feedback in a Preservice Special Education Teacher Training Program. Final Report 53.32.

Semmel, Melvyn I.; And Others

Indiana Univ., Bloomington. Center for Innovation in Teaching the Handicapped.

Aug 1976 131p.; Several tables in Appendix I may not reproduce well due to light print

Sponsoring Agency: Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.

EDRS Price - MF01/PC06 Plus Postage.

Document Type: RESEARCH REPORT (143)

The effects of Computer-Assisted Teacher Training System (CATTS) feedback in a preservice special education teacher training program are discussed. It is explained that a series of studies were conducted to test the efficacy of CATTS feedback in effecting teacher trainees' acquisition and performance of specific teaching skills. Chapter 1 presents the goals and objectives of the project, an overview of the project (pilot procedures, descrimination training, laboratory classroom design, trainee evaluation), and describes both the organization of the CATTS project and an overview of CATTS itself (teaching station, observation coding station, analysis-encoding station). Chapter 2 deals with the two observation systems used for feedback of teacher and student behaviors to trainees, COG-STRAT (focused on teacher and student cognitive styles of interaction) and MAN-STRAT (focused on student on- and off-task behavior and strategies of teacher management of student behavior), and discusses such areas as observer training and evaluation of observer competencies. Such aspects of project organization and implementation as teacher education laboratory classrooms, implementation procedures (teaching and coding), scheduling observation and teachers, and the effects of feedback on trainee behaviors are studied in chapter 3. Chapter 4 summarizes the results of the study which revealed that all trainees significantly increased their rate of criterion performance as a function of CATTS feedback. The summary and conclusions of the project are presented in the final chapter. (BD)

**ED217664 EC142750

The Development of Plato Computer-Based Instruction for the Severely and Profoundly Developmentally Disabled.

Siegel, Martin A.; Clapp, Elizabeth Jane
Illinois Univ., Urbana. Computer-Based Education Research Lab.
Dec 1981 86p.
EDRS Price - MF01/PC04 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The 2 year project (July 1, 1978 through June 30, 1980) sought to determine the viability, attractiveness, and effectiveness of computer based instruction with approximately 225 severely and profoundly mentally handicapped and developmentally disabled institutionalized children and adults. Over 100 instructional formats were developed by staff from the PLATO Education Group of the Computer-based Education Research Laboratory, University of Illinois at Urbana-Champaign. Skills addressed included basic language and math skills important to academic instruction. A direct instruction model was used for designing the computer based lessons. The means of delivering this instruction was the PLATO system, a sophisticated computer based instructional system utilizing a versatile graphics and touch sensitive terminal. The research suggested that carefully designed PLATO materials could provide effective and efficient instructional services not currently offered by other media. (Author)

**ED201075 EC132500

Computer-Assisted-Instruction in Word-Decoding for Educationally-Handicapped Children.

Spring, Carl; Perry, Linda
San Juan Unified School District, Carmichael, Calif.
1980 27p.
Sponsoring Agency: Office of Education (DHEW), Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A computer assisted instruction system for drilling educationally handicapped children in word decoding skills is described. A theoretical rationale for the objectives and design of the system, based on research from the psychology of reading literature, is discussed. In addition, certain system design constraints, applied in order to accommodate the possibility of future conversion of the system to an inexpensive, hand held device, are discussed. Results of a controlled field test of the system with 12 educationally handicapped elementary school children indicated significant word decoding improvement accompanied by high learner motivation which did not significantly decline during the 2 month training period. (DB)

ED160070 IR006213

Telecommunications for the Severely Handicapped. Final Report.

Tawney, James W.
Jan 1977 180p.; Photographs and charts may reproduce poorly
Sponsoring Agency: Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
EDRS Price - MF01/PC08 Plus Postage.
Document Type: RESEARCH REPORT (143)

The project described was designed to develop prototype electronically controlled learning environments in home settings, in order to provide instruction for persons with assumed severe developmental retardation and attendant multiple handicaps. The first of nine sections in this report contains the justification for the project, abstracted critical components of the request for proposals, and a list of the major objectives proposed for the project. Specific steps and major events are listed in chronological order in Section 2. Sections 3, 4, and 5 report the procedures and outcomes of system development, child referral and family demographic information, and instructional home intervention. Contributed services from the University of Kentucky Center for the Handicapped are described in Section 6, child performance profiles are listed in Section 7, costs estimates for a prototype system are provided in Section 8, and a summary and recommendations are presented in Section 9. Appendices include a discussion of the rationale for the development of telecommunications technologies and descriptions of five prototype systems; a chart summarizing the major activities associated with technological development and their attendant problems; and a telecommunications operations manual. (Author/CMV)

ED157299 EC111784

Programming Educational Environments for the Severely Retarded: Curriculum Development, Research and Service, Emanating from an Errorless Learning Model.

Tawney, James W.

Jun 1978 19p.; Paper presented at the World Congress on Future Special Education (First, Stirling, Scotland, June 25 - July 1, 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

The paper describes a 6-year project to develop curriculum, instructional technology, and computer generated instruction for severely developmentally retarded children (1 to 21 years old). Sections focus on curriculum content (which includes 100 instructional programs in such areas as self help skills), curriculum structure, the integrated learning system, instructional model, and field validation. A view of the educational environments for severely impaired children in the year 2000 is presented, encompassing the concepts of efficient and futuristic uses of computer technology in homes and in schools. (Author/SBH)

**ED202227 FL012299

Possible Pedagogical Applications of a Talking Computer Terminal for the French-Speaking Blind to Foreign Language Teaching.

Trescases. Pierre

(See Content Area Applications: Foreign Languages)

ED160046 IR005997

A National Survey of the Use of Computer Assisted Instruction in Schools for the Deaf. Final Report.

vonFeldt, James R.

National Technical Inst. for the Deaf, Rochester, N. Y.

Jan 1978 12p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This survey was the first systematic attempt to identify use of computer assisted instruction (CAI) in schools for the deaf. Eleven of the 50 states surveyed (46% questionnaire return rate) identified CAI systems in 34 schools for the deaf with a total of 408 terminals; elementary and secondary schools for the deaf were the predominant users. Of special note is the indication that schools for the deaf are not time sharing between administrative and educational uses--dedicated instructional systems are the rule, and 28 of the 34 computer systems are used strictly for CAI. (Author/CMV)

**ED203849 IR009381

An Update on Computers in the Classroom.

Walker, Robert J.

1980 16p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070)

There are several efforts today in the United States to explore and develop new educational applications for both the main frame computers and the microcomputers, especially in the development of instruction for the culturally disadvantaged and the handicapped. Recent developments for the visually impaired include using high speed braille-terminals connected to a central computer, and a talking calculator which uses synthesized speech to interpret keys pressed and results displayed. New technology for the hearing impaired includes a touch sensitive screen to take programs ranging from Spelling Bee to Calculator, and a video interactive device to teach lip reading skills. Computer assisted instruction, consisting mainly of drill and practice, has also been successfully used for the mentally handicapped and learning disabled children at the elementary and junior high school levels. Efforts to help the physically disabled have resulted in a speech synthesizer, and a graphic display screen used in conjunction with a hand-held pen. An additional function of the computer has been to diagnose and prescribe instruction for the handicapped, and to support individualized programs for emotionally disturbed students. Forty references are included. (Author/BK)

ED157333 EC111818

The Instructional Use of CAI in the Education of the Mentally Retarded.

Winters, John J., Jr.; And Others

Jun 1978 13p.; Paper presented at the World Congress on Future Special Education (First, Stirling, Scotland, June 25 - July 1, 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Computer assisted instruction (CAI) studies with the mentally retarded in the United States and Canada reveal that the retarded benefit from CAI in academic and social skills. Their learning is enhanced to the same extent as that of the nonretarded. CAI can be cost-effective, especially with the reduced costs of mini and microcomputers; however, available computer programs are not developed specifically for this population. An integration of available low cost computers and dedicated high quality computer programs is required if the mentally retarded are to benefit from CAI courseware. (Author/SBH)

**ED211050 IR009853

Instructional Technology for Special Needs. Discussion Paper 02/81.

Wright, Annette

British Columbia Dept. of Education, Victoria.

Jul 1981 64p.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

This paper reviews selected research projects which focus on creating learning environments for special education, including those for handicapped, disadvantaged, and gifted children. Technologies that are applicable for gifted, retarded, blind or visually impaired, and deaf or hearing impaired students are discussed, as well as those for students who have poor motor coordination or communication difficulties. Appendices include information on the following technologies: computers, microcomputers, videotapes, videodiscs, the Kurzweil reading machine, and microcommunicators. (LLS)

New Audiences: Incarcerated Learners

ED149712 IR005379

Minnesota Corrections Computer-Based Instruction Project. Final Progress Report. January 1 to March 31, 1977.

Bagley, Carole A.

Minnesota State Dept. of Corrections, St. Paul.

1977 33p.; Appendix not available in hard copy due to poor quality of the original ; Best copy available

Sponsoring Agency: Law Enforcement Assistance Administration (Dept. of Justice), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

This final report on the first year of the Minnesota Corrections Computer Project contains information on administration, organization, information development, user services, delivery, evaluation, planning, and finances of the project. Implemented at two juvenile correctional institutions, this program was intended to provide supplementary instruction in basic mathematics, reading skills, and vocational awareness. The computer was used to provide drill and practice, gaming, and tutorial instruction. Student attitudes toward the project are reported. Appended is the implementation plan, including a time schedule. (Author/STS)

ED175423 IR007587

An Evaluation of the Effectiveness of a Computer Assisted Instructional Program in Basic Literacy Skills in a County Jail.

Diem, Richard A.; Fairweather, Peter G.

12 Apr 1979 13p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 12, 1979)

Sponsoring Agency: Bureau of Prisons (Dept. of Justice), Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); EVALUATIVE REPORT (142)

This evaluation of the effectiveness of a computer assisted instructional program in basic literacy skills for inmates in a county jail covers the first year of the program. Instructional materials used were developed by Control Data Corporation for use on the PLATO system, and consisted of lessons in vocabulary, reading, spelling, arithmetic computation, and arithmetic problem solving. The reactions of both the prison population and the administrative staff of the Bexar County Detention Center (San Antonio) and their involvement in the program are discussed. Achievement gains of prisoners participating in CAI are compared with those of prisoners in a traditional instruction group, and some suggestions are offered for more effective use of CAI both for inmates and staff development courses. (RAO)

**ED186027 IR008394

Results and Analysis of a Computer Assisted Instructional Program in Basic Skills in a Detention Center.

Diem, Richard A.

Feb 1979 13p.; Paper presented at the Annual Meeting of the Southwestern Educational Research Association (Houston, TX, February 1979).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

An evaluation of a computer assisted educational (CAE) program using the PLATO system at a Texas detention center included an examination of attitudes and perceptions from (1) inmates participating and not participating in jail education programs, (2) trustees, (3) educational program staff, (4) chaplaincy staff, (5) guards assigned to the education area, (6) floor guards, (7) guard training supervisor staff, and (8) upper echelon jail and sheriff's department administrators. Also examined were the results of a basic skills curriculum study which compared student scores on vocabulary skills, reading, spelling, arithmetic computation, and arithmetic problem solving from a CAE and a traditional program. Findings indicated that PLATO was generally viewed as an effective and pleasurable teaching device, and that, in general, achievement gains were greater for the CAE program group than those for the traditional program group over an 8-week instructional period. (CMV)

**ED189125 TM800291

Evaluation of Title I CAI Programs at Minnesota State Correctional Institutions.

Sandman, Richard S.; Welch, Wayne W.

Minnesota Univ., Minneapolis.

Jul 1978 109p.

Sponsoring Agency: Minnesota Educational Computing Consortium, St. Paul.

EDRS Price - MF01/PC05 Plus Postage.

Document Type: EVALUATIVE REPORT (142); TEST, QUESTIONNAIRE (160)

Three Minnesota correctional institutions used computer-assisted instruction (CAI) on PLATO terminals to improve reading and mathematics skills: (1) the State Reformatory for Men, St. Cloud (males, ages 17-21); (2) the Minnesota Home School, Sauk Centre (males and females, ages 12-18); and (3) the State Training School, Red Wing (males, ages 13-18). Curriculum packages included PLATO Corrections Project Mathematics Curriculum, the Basic Skills Mathematics Curriculum, and the Basic Skills Reading Curriculum. Program evaluation concentrated on basic skills; students' attitudes toward mathematics, reading, learning, and CAI; success in program implementation; and staff attitudes toward CAI. Suitability of the curricula and technical issues in administering CAI programs were also considered. Achievement gains were measured by the Tests of Adult Basic Education (TABE); the Student Attitude Survey and interviews were used to elicit students' and teachers' reactions. Results did not clearly support CAI effects on achievement, although the students did show progress. Students' attitudes showed improvement, but this was not related to instructional time or use of the computer. Students' attitudes toward CAI were generally positive. Staff attitudes were positive at two of the institutions. (Recommendations, the four-part student Attitude Survey, and interview questions are appended). (GDC)

**ED206823 CE029854

An Evaluation of Computerized Instruction for Institutionalized Adult Students, Addicts and Alcoholics.

West, Malcolm R.

Eagleville Hospital and Rehabilitation Center, Pa.

14 Sep 1981 15p.

Sponsoring Agency: Pennsylvania Research Coordinating Unit for Vocational Education, Harrisburg.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)

A program of computer-assisted instruction (CAI), using the Radio Shack TRS-80, was tried at Eagleville (Pennsylvania) Hospital and Training Center for adult alcoholics and drug abusers. Most of the students using the program had extremely low reading levels and little success with schools; a majority had been in trouble with the law. It was hoped that CAI would engage the students in meaningful learning, free teachers for more individualized help for students, and set up an atmosphere of success in education for the students. A process evaluation of the program showed that some of these objectives had been met; however, there were problems in some areas. In general, most of the students reported that they enjoyed the use of the computers, and that they were learning from the experience. Teachers said about half the students appeared to be benefitting. Although it could not be documented, it appeared likely that the success students had experienced in their limited exposure to the CAI could carry over in future training endeavors. Problems encountered in implementing the program included software that was inappropriate for age level of the students, or had too many programming errors; equipment malfunctions and inadequacy of the cassette player/recorder selected; and security problems that caused the computers to be installed in three different locations and increased the teachers' work load. As a result of the process evaluation, it was concluded that the minicomputers provide a very useful adjunct to the educational program at Eagleville, but that they are not being used to their full potential. Recommendations were made for hardware and software changes, a better environment, and staffing possibilities. (KC)

New Audiences: Museum Visitors

**ED207523 IR009607

Exhibits Enhanced by Stand-Alone Computers.

Van Rennes, Eve C.
Cranbrook Inst. of Science, Bloomfield Hills, Mich.
May 1981 29p.; Photographs will not reproduce on microfiche.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

Both the development and evaluation of one of a set of computer programs designed for use by visitors as adjuncts to museum exhibits are described. Museum displays used were (1) a static, behind-glass exhibit on evolution; (2) a hands-on primitive stone age tools exhibit; and (3) a Foucault pendulum. A computer placed next to each exhibit served as a simulation of a teacher who asked questions by way of a video screen and received responses keyed in on a typewriter keyboard. Questions about the visitors were used in the analysis of responses to leading questions to cue the computer response to the sophistication and age of the user. A preliminary study for the evolution program showed that the mean scores for a 4-question test, administered via computer to 138 randomly selected visitors over the age of 14, were significantly higher for the visitors who had used the computer program for that exhibit than for those who had used one of the other programs. This report also describes the design and results of an experiment to test the effectiveness of one section of the program, and outlines some practical conclusions drawn from project experiences. (MER)

Content Area Applications: Agriculture

ED179798 CE023567

Computer Assisted Instruction in Agricultural Education.

Hudson, C. Jordan
1979 7p.; Speech presented at the Annual Convention of the American Vocational Association (73rd, Anaheim, California, December 1, 1979)
EDRS Price - MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)

Computer Assisted Instruction (CAI) is discussed briefly as it might apply to agricultural education in order to supplement both text and teacher. CAI format is shown in a typical tutorial program used to help students understand basic concepts of work, power, horsepower, and torque. The author points out other instructional uses of CAI, such as collection and treatment of data; sharing of programs with other teachers; teaching logic; testing to the maximum level of student ability; generation of exams, simulations, and games; and graphics. CAI's most important feature, the author contends, is the interaction—the provision of immediate, relevant feedback to the student. (CP)

**ED205743 CE029735

Inservice Workshops on New and Emerging Agriculture/Natural Resources Occupation Instructional Materials. Final Report, January 1, 1980-June 30, 1981.

Leising, J.; Wilkins, Russell
California Univ., Davis. Dept. of Applied Behavioral Sciences.
1981 140p.
Sponsoring Agency: Office of Education (DHEW), Washington, D.C.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055); BIBLIOGRAPHY (131)

This document contains the final report and appendixes from a project to develop resources for use by community college agricultural education instructors in better utilizing computer technology in instruction and to provide inservice workshops to make the instructors aware of available hard-and software. The four-page narrative lists objectives, activities, and conclusions. The major appendix is the product, Microcomputer Resource Guide for Agriculture. Developed to serve as an introductory text for microprocessors and software index for agricultural programs, the guide provides descriptive explanation of microcomputers and their related software. Hardware selection criteria are discussed. A computer program index file using the Agdex subject titles lists more than 100 application software programs for agriculture in these areas: field crops, horticulture, forestry/natural resource, animal science, soils, diseases and pests, agricultural engineering, and agricultural economics. Each program entry provides this information: subject/enterprise, computer level, language, cost, computer type, mode of transfer, program title and description, references, authors, and specific comments. Some appendixes contain lists of user groups and microcomputer manufacturers, references, and glossary. Other appendixes include workshop materials and evaluation instruments and results. (YLB)

Content Area Applications: Basic Skills (Remedial Instruction)

ED160074 IR006233

Basic Skills Mathematics Curriculum Development for CBE.

Heimer, Ralph T.; Rizza, Peter J., Jr.

Mar 1978 7p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

This paper describes the Basic Skills Learning System, a comprehensive curriculum development effort designed to deliver a variety of materials via the PLATO System in the three content areas of reading, language, and mathematics. Design criteria required that the system be individualized, adaptive, and responsive as well as modularized and structured hierarchically, and use performance objectives, the mastery learning paradigm, diagnostic and prescriptive strategies, and a multi-sensory learning format. Discussion focuses primarily on the Basic Mathematics curriculum as an example of the type of instructional material and strategy used throughout the Learning System. (VT)

**ED219111 JC820366

Is Micro-Computer Assisted Basics Skills Instruction Good for Black, Disadvantaged Community College Students from Watts and Similar Communities? A Preliminary, Fall Semester 1981-82 Mini Audit Report Suggests Caution.

Kester, Donald L.

Aug 1982 14p.; Paper presented at the International School Psychology Colloquium (Stockholm, Sweden, August 1-6, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

This report assesses the economic viability of micro-computer assisted basic skills instruction at Los Angeles Southwest College, an institution in which 96% of the students are from minority groups, the majority are from low-income families, and most have low levels of academic achievement (averaging a seventh-grade level in reading skills). After presenting a demographic profile of the college's student population, an outline of students' basic skills needs, and the sources of funding for computer-assisted basic skills instruction, the report examines the relative costs of computer-assisted and regular faculty instruction in basic skills. The conclusion is reached that, over a 5-year period, significant savings could be made through the use of computer-assisted instruction. The remainder of the report consists of an independent auditor's assessment of whether students who used computer-assisted instruction to supplement their regular programs made greater gains in reading skills and had lower termination rates than those students who did not have supplementary instruction. The report indicates that there was a significantly greater improvement in the reading skills of the four classes that used computer-assisted instruction than of the two classes that did not, but that the computer-assisted group suffered higher rates of attrition than the control group. The report concludes with a recommendation to investigate whether certain types of students benefit more from computer-assisted instruction than others. (HB)

ED167114 IR006854

Highline Public Schools Computer-Assisted Instruction Project: A Program to Meet Disadvantaged Students' Individual Needs for Basic Skill Development: Final Report.

Maser, Arthur L.; And Others
Highline Public Schools, Seattle, Wash.
30 Jun 1977 114p.; Parts marginally legible due to print quality
EDRS Price - MF01/PC05 Plus Postage.
Document Type: EVALUATIVE REPORT (142); RESEARCH REPORT (143)

This description of a computer-assisted instruction project, which provides an alternative approach to individual instruction in basic skills for economically and educationally disadvantaged students at the secondary level, includes the results of evaluations conducted at the end of each of three school years. Instruction in priority areas--arithmetic, language arts, and reading--was administered to students severely deficient in one or more skill areas in a different manner within each school. Management and student outcome objectives were evaluated by written documentation and data on student pre- and posttests. Data indicate that student use was excellent during the 1974-1975 school year, outcome objectives were met, and response by students, parents, and faculty was generally positive. Management and student outcome objectives in the second year of implementation met or exceeded expectations, student and teacher involvement increased remarkably, and student, parent, and faculty attitudes were especially positive. Objective data for the third year of operation produced the most outstanding results, indicating that the program was highly successful and that computer-assisted instruction is a viable method of building basic skills with eligible students. (CWM)

ED128056 JC760494

Multimedia Instruction in Basic English.

Rudisill, Vivian A.; Jabs, Max L.
San Antonio Coll., Tex.
1976 12p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Individual, self-paced, and computer assisted instruction (CAI) characterize the English Multimedia Laboratory of San Antonio College, where entering freshmen with composite American College Test scores in the lowest category of 1-15 have increased from 28% in 1967 to 61% in 1975. The multimedia lab, operational since 1973, replaced the relatively ineffectual Basic English remedial course. Personalized instruction is the primary characteristic of the laboratory, each student moving at his own pace through ten learning areas according to specified behavioral objectives. CAI plays an integral part, providing nearly instantaneous feedback and additional tutoring, as necessary, to student users. CAI has also been adapted for use with hearing-impaired students. Results of the multimedia laboratory, in addition to increased levels of competency, include: individualized learning of basic skills at the student's own level of performance, individual review and testing, increased motivation, immediate reinforcement, improved attendance and student involvement, a sequence of instruction, and self-tutoring. A comparative study of students' subsequent freshman composition grades has shown that grades of D and F decreased from 54.02% in pre-lab years to 38.64% since implementation of the lab. (JDS)

ED171326 IR007380

CAI As An Adjunct to Teach Basic Skills.

Simutis, Zita M.
1979 12p.; This study was supported in part by the Defense Activity for Non-Traditional Educational Support, Pensacola, FLA
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

A study was conducted to determine the instructional effectiveness of supplementary computer assisted instruction (CAI) for high school equivalency training in the military. Thirty-two students in language arts classes and 32 students in mathematics classes were randomly divided into two groups: one receiving traditional instruction and the other traditional instruction supplemented by CAI.

Students were Army enlisted personnel, none of whom were high school graduates. A CAI curriculum specifically tailored to the needs of the study was developed from existing lessons in language arts and mathematics available on the University of Illinois PLATO system. Students in the traditional group received instruction concurrently in the same topics as the traditional with CAI group. On all measures, scores for students in the traditional with CAI group were higher than for students in the traditional only group. The research indicated that CAI can successfully be implemented at an Army education center for use with students in the lower abilities range. (CMV)

**ED185505 CS005367

A Computer-Based Approach to Functional Literacy Training for Recruits: Performance-Related Enabling Skills Training (PREST).

Stolte, Joanne B.; Smith, Shirley C.

Research for Better Schools, Inc., Philadelphia, Pa.

Apr 1980 23p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 7-11, 1980). For related document see CS 005 368. Figures 5 and 6 may be marginally legible.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

A cost-effective, computer-based, Navy-related basic reading skills program was developed for United States Navy recruits reading below sixth grade level. The program, called Performance-Related Enabling Skills Training (PREST), is designed to enable recruits to improve their reading and study skills and, thereby, increase the probability of their successful completion of recruit training. The cost-effectiveness of this program is significant in light of current escalating instructor-related costs and the increasing need to accommodate greater numbers of recruits. (Author/MKM)

**ED216150 CE032202

PLATO Use in Oklahoma Skill Centers. Final Report.

Wadsworth, Samuel G.; Frazier, William D.

Oklahoma State Dept. of Vocational and Technical Education, Stillwater.

Apr 1982 33p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

This study was conducted to evaluate the usefulness of the PLATO instructional system to teach adult basic education and general educational development students basic mathematics and reading skills. The study was conducted with a control group of students who had no use of PLATO during an 18-month period, a second group of students who had less than 20 hours of PLATO in a given subject, and a third, experimental group who had more than 20 hours of PLATO instruction in a given subject. Results indicated that there was no difference in achievement levels among the three groups; that retention was perhaps somewhat better for the students who used PLATO, and that time spent in classes was much greater for the students who used PLATO. Although few conclusions could be drawn because of lack of control over the study and lack of appropriate use of the PLATO system, one possible conclusion is that mixing instructional methods, i.e., applying traditional instruction and PLATO instruction intermittently in the classes, was confusing to the students. This could account for increased time in classes for students who used the PLATO system without increasing achievement. (Author/KC)

Content Area Applications: Bilingual and English As a Second Language Instruction

**ED218936# FL012996

PLATO Reaches International Students with English Lessons.

Dixon, Rebecca

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p98-112 Spr 1981

1981 15p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

English as a Second Language (ESL) PLATO lessons, the students for whom the materials were designed, and the effectiveness of the program at the University of Illinois, Urbana-Champaign, are examined. Two groups of ESL students on the campus have been involved in computer assisted instruction--international students whose native language is not English who have been admitted into degree programs at the university, and nonnative speakers of English attending the Intensive English Institute on the campus and who are not in university degree programs. The lessons have been designed for two levels of students (loosely defined as high and low) and arranged and written to serve as supplementary to the classroom work. Students are assigned four hours of time per week on PLATO, and each unit usually includes four lessons--structure, spelling, dictation, and either a reading or culture lesson. In the two groups, the students are paced through the lessons by a router that will, to an extent, prevent the student from attempting to work with lesson material on PLATO which has not been introduced in class, since PLATO lessons assume prior classroom instruction. The first unit in both programs is a help lesson that provides an introduction to PLATO, the keyboard, the function of the nonletter keys, and the vocabulary used by PLATO to give instructions and to supply feedback. Animation and graphic illustrations have been used in presenting many of the grammar and culture concepts. Games such as crossword puzzles, matching, and word discovery are also used. At present, the lessons only supplement lessons 1-17 of the text, and entail a 16-week study period. The completion of the PLATO lessons to correspond to the text lessons is anticipated. (SW)

**ED212146# FL012752

Computer-Assisted Bilingual Education.

Friedenberg, Joan E.

Eastern Michigan Univ., Ypsilanti.

1981 12p.; Published as part of the Ethnoperspectives Project. For volumes 1 and 2 of that project, see ED 200 005 and 203 663. For related documents, see FL 012 738 and FL 012 740-769.

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

Available from: Not available separately. See ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055)

Four aspects of computer assisted instruction (CAI) are treated: (1) an introduction to computer literacy and awareness; (2) guidelines for establishing a computer-assisted bilingual instruction site; (3) a description of some existing computer-assisted bilingual projects; and (4) identification of future needs. The first section provides a glossary of computer-related terminology, an outline of uses for computers in bilingual education, and a discussion of the benefits of CAI to bilingual education. The guidelines presented in Part 2 include a discussion of defining needs and objectives; acquiring equipment; acquiring and developing courseware; and managing, supervising, and evaluating. The existing programs in Texas, Illinois, Vermont, and Lima (Peru) are described in the third section. These are primary school level and include programs designed to supplement regular class instruction, remedial programs in various subjects, French and Hmong courseware (Vermont), and ESL supplementary practice materials (Peru). The final section discusses needs for the future in terms of a list developed ten years ago of the critical obstacles to CAI. (AMH)

**ED216345 CS206806

An Error-Analysis Design for Improving the Writing Skills of College-Level Foreign Language Students.

Krug, Clara

Jul 1981 13p.; Paper presented at the Meeting of the National Endowment for the Humanities/Beaver College Summer Institute for Writing in the Humanities (Glenside, PA, July 26-31, 1981).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

Based on the premise that teaching basic writing involves first understanding what tends to go wrong when students write, a computer assisted system of error prediction and analysis was designed to improve college students' writing skills in both English and French. Students were to complete a sequenced series of writing assignments first in English, then in French. To determine the relationship between English and French errors, error data would be collected, classified, recorded on code sheets, and interpreted through a specially designed computer program. Findings from the error analysis would then be used to review syntactic and grammatical problem areas with a second class prior to making their writing assignments, with the hope that such errors would decrease for this group of students. If effective, a similar error analysis design could be used in two other areas of study: English as a second language and business. (AEA)

**ED214391 FL012844

Computer-Assisted Instruction in the ESL Curriculum.

Lavine, Roberta Z.; Fechter, Sharon Ahern

Oct 1981 33p.; Paper presented at the Conference of the Washington Area Teachers of English to Speakers of Other Languages (Baltimore, MD, October 2-3, 1981). A portion of the appendix has been omitted because of poor reproducibility.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150); TEACHING GUIDE (052); PROJECT DESCRIPTION (141)

A double perspective is offered on computer-assisted instruction (CAI): (1) a definition is provided, the role of a computerized component in an ESL curriculum is examined, and the potential of computerized learning in the ESL field is explored; and (2) the CAI program at Strayer College in Washington, D. C. is described. The definition proposed is the use of a computer in enhancing the learning and mastery of a specific skill. Because of CAI's versatility and provision for individualization, several advantages of this type of instruction are discovered: (1) errors can be analyzed and positive reinforcement given; (2) testing can become a learning process; and (3) it can provide almost unlimited opportunity for drill and practice. Almost any written material can be adapted for computer exercises using the drill and practice, tutorial, testing, dialogue, or simulation and gaming modes. The computer learning program at Strayer College is mainly employed in the drill and practice mode and is used along with classroom instruction. The other instructional modes are used as well and are described briefly. Several computer exercises are appended. (AMH)

**ED213780 UD022117

Evaluation of the Title VII Computer Assisted Spanish English Transition (CASETS) Project, 1980-81.

Rutherford, William B.; Almaguer, Ted O.

Dallas Independent School District, Tex. Dept. of Research and Evaluation.

Sep 1981 28p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

This report evaluates the first year of a project implemented in the Dallas (Texas) Independent School District for the purpose of improving English language skills of limited English speakers (LEPs) through the use of their native language (Spanish) and computer-assisted instruction. The achievement scores and gains of LEP and non LEP seventh and eighth graders on the Spanish and English versions of the Iowa Tests of Basic Skills and the Parallel Form Social Studies Test are analyzed. It is reported that LEP students gained fifteen months on the vocabulary section and nine months on the language section of the Iowa Tests of Basic Skills, as compared to nine months on both sections for non LEP students. The report also states that the intended objective was attained on the Spanish form of the Social Studies Test. It is noted, however, that all other forms taken by LEP and non LEP students failed to demonstrate that students had reached the stated objective. (JCD)

Content Area Applications: Computer Literacy

**ED203835 HE014227

Developing a Computer Literate Faculty at College of DuPage.

Carlson, Bart

Interuniversity Communications Council (EDUCOM), Princeton, N. Mossove

1980 10p.; Paper presented at the Annual Meeting of EDUCOM (1980).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Until 1978, academic and administrative departments at College of DuPage, an Illinois community college, bought computer related equipment and software without an overall plan or coordination. The development of a coordination plan focused on finding an internal mechanism to solve two problems: individual departments buying computer-related products, and inability to predict accurately each computer-related time needed in the course of an eight-year period. A formal long-range plan was developed that described the mission, philosophy, goals, and history of the college and the computer services section, and discussed computing industry trends. It concluded that the college's best course of action was to invest in commercially developed and maintained software rather than a larger staff. Both maxicomputer and minicomputer systems of varied types and brands comprise the current college system. Other features of the plan include computer awareness training for staff,

a monthly newsletter, and a microcomputer laboratory to allow faculty to experiment with hardware and software. Areas of benefit to the college found in the planning process included awareness throughout the institution of the need for planning, campus-wide compatibility for interconnection to maxicomputers and microcomputers on campus and within the national educational computer network (EDUNET), ease in problem determination, ease in coordinating maintenance, and institutional awareness of what's happening at the department levels. (MSE)
Until 1978, academic and administrative departments at College of DuPage, an Illinois community college, bought computer related equipment and software without an overall plan or coordination. The development of a coordination plan focused on finding an internal mechanism to solve two problems: individual departments buying computer-related products, and inability to predict accurately each computer-related time needed in the course of an eight-year period. A formal long-range plan was developed that described the mission, philosophy, goals, and history of the college and the computer services section, and discussed computing industry trends. It concluded that the college's best course of action was to invest in commercially developed and maintained software rather than a larger staff. Both maxicomputer and minicomputer systems of varied types and brands comprise the current college system. Other features of the plan include computer awareness training for staff, a monthly newsletter, and a microcomputer laboratory to allow faculty to experiment with hardware and software. Areas of benefit to the college found in the planning process included awareness throughout the institution of the need for planning, campus-wide compatibility for interconnection to maxicomputers and microcomputers on campus and within the national educational computer network (EDUNET), ease in problem determination, ease in coordinating maintenance, and institutional awareness of what's happening at the department levels. (MSE)

**ED192815 IR008902

Computer Education. DS Manual 2350.1.
Dependents Schools (DOD), Washington, D.C.
Jun 1978 12p.; Photographs and charts may not reproduce clearly.
EDRS Price -MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); DICTIONARY (134)

This brief description of the Department of Defense Dependents Schools' (DoDDS) computer education program is intended to provide direction for and to stimulate development of computer applications in elementary and secondary schools administered by DoDDS. This 3-dimensional program consists of (1) computer instruction, including both computer literacy and computer science; (2) classroom applications, including computer-assisted instruction (CAI), computer-simulated instruction (CSI), computer-developed instruction (CDI), and computer-managed instruction (CMI); and (3) such administrative applications as student services, resource management, and education research and program development. (LLS)

**ED193022 SE032769

Computer Literacy Program Briefs.
Human Resources Research Organization, Alexandria, Va.
1978 20p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price -MF01/PC01 Plus Postage. Document Type: PROJECT DESCRIPTION (141)

Computer Literacy Program Briefs for seven schools and/or school districts are presented. Topics covered in each brief include: the institution or institutions covered, the educational program strategies, the target student audience, major components of the instructional program, illustrative examples of specific objectives, organization of the instructional package, facilities and equipment used, the nature and extent of teacher training, classroom activities and resource materials, and the impact and effect of the computer literacy program. (MP)

**ED188861 SE030720

Computers and Computer Literacy in the Algebra I and the Trigonometry Classroom. OCCE Special Report.
Dunlap, Mike; And Others
Oregon Council for Computer Education, Portland.
Sep 1974 34p.; Contains occasional light and broken type.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The two sections found in this publication, "Integrating Computer Literacy With Existing Classes" and "Guide to Computer Augmented Trigonometry," were written by participants in two summer courses at the University of Oregon. The first section addresses the general topic of teaching computer literacy through existing classes, then it focuses on the specific course Algebra 1, including several specific examples of activities. The second section includes a variety of suggestions for using computers in trigonometry. While the main emphasis is on learning traditional course content, the student can also gain knowledge of the use of computers in mathematics in general. (MK)

**ED195247 IR008993

An Approach to Integrating Computer Literacy Into the K-8 Curriculum.

Hunter, Beverly

Human Resources Research Organization, Alexandria, Va.

Oct 1980 12p.; Based on a presentation for the National Educational Computer Conference (Norfolk, VA, June 24, 1980).

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

The goal of the research and development project described is to make it possible for students in grades K-8 to acquire at least minimal computer-related skills. The report gives the long range goals of the project, perceptions on the need for a computer literacy program, recommended approaches for satisfying that need, and the pros and cons of a K-8 infusion approach to computer literacy. A series of curriculum guides for the K-8 computer literacy program for use by school administrators, media center people, teachers for grades K-8, and subject coordinators will be produced before the termination of the project, scheduled for September 1983. (MER)

**ED191712 SE031937

A Study of Computer Use and Literacy in Science Education. Final Report, 1978 -1980.

Klassen, Daniel L.; And Others

Minnesota Educational Computing Consortium, St. Paul.

1980 208p.; Not available in hard copy due to marginal legibility of original document. Appendices A, C, and G removed due to copyright restrictions. Appendix F missing from document prior to its being shipped to EDRS for filming.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: PROJECT DESCRIPTION (141); RESEARCH REPORT (143)

This research project was designed to provide information which will be of assistance to science educators responsible for and interested in the development, implementation and evaluation of educational programs and courses designed to foster computer literacy. A questionnaire concerning computer use in the classroom was answered by 3,576 science teachers. The data from the questionnaire demonstrate that teachers strongly support minimal understanding of computers and their societal role for every secondary school student and that they generally feel positive about the value of computers in education. Responses of the 929 students who had been exposed to instructional computing activities demonstrated significant gains in both affective and cognitive dimensions of computer literacy. (Author/DS)

**ED192767 IR008838

Shall We Teach Structured Programming to Children?

LaFrance, Jacques E.

1979 11p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

To study the effectiveness and feasibility of using structured programming games at the elementary school level, this study presented one and one-half hours of programming instruction to a group of gifted children between the ages of nine and twelve. Using a game called Antfarm and the programming language Pascal, the instruction introduced certain structured programming features such as basic commands, concepts of sequence, iteration, selection and refinement, and the notion of hierarchical structure. Results showed high motivation for the entire group. A few children were beginning to use top-down design, to define their own modules, and to give them names. Two problems noted were that the selection commands were difficult for the children to learn, and technical bugs sometimes caused the program to abort. A 19-item bibliography is attached. (BK)

**ED214446 HE014898

Computer Literacy in Higher Education. AAHE-ERIC/Higher Education Research Report No. 6, 1981.

Masat, Francis E.

American Association for Higher Education, Washington, D.C.; ERIC Clearinghouse on Higher Education, Washington, D.C.

1981 63p.

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

Available from: American Association for Higher Education, One Dupont Circle, Suite 600, Washington, DC 20036 ($4.00, members; $5.50, nonmembers).

EDRS Price - MF01/PC03 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); ERIC PRODUCT (071)

Computer literacy in higher education and its relationship to computer science and other areas of the institution, such as general and continuing education, are considered, along with issues related to academic and administrative aspects of computer literacy. The impact of microcomputers is assessed, as is the extent to which computer science and literacy are increasing in other countries. It is suggested that given the continuing success of computer literacy at the elementary and secondary levels, computer literacy in higher education could, in time, acquire the status of a basic skill. Curricular concerns include the advantages and disadvantages of computer assisted instruction (CAI), the relationship of microcomputers to CAI, and who should be computer literate. According to the literature, computer literacy is intended for everyone, and the literacy level that is effective at one institution may be inappropriate at another, although common characteristics are indicated. Important administrative considerations are the issues of facilities planning, the acquisition of computer literate faculty and staff, and the cost of providing literacy to students, faculty, and administrators. In brief, the relationships among goals of students, faculty, and staff members and the relationship of these goals to resource support are determining factors in the planning, development, and implementation of computer literacy programs. Issues and problems of national scope that require national strategies for their resolution include: networks, national databases, federal support of computer education, national cooperation and coordination, and international competition. The state-of-the-art in computer literacy practices and research is reviewed, and a bibliography is appended. (SW)

**ED207551 IR009662

Contributions of Cognitive Science and Related Research on Learning to the Design of Computer Literacy Curricula. Rport No. 81-1. Series in Learning and Cognition.

Mayer, Richard E.

California Univ., Santa Barbara. Dept. of Psychology.

Dec 1980 35p.; Shorter version of this paper was presented at the Conference on National Computer Literacy Goals for 1985 (Reston, VA, December 18-20, 1980). For a related document, see IR 009 660.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: REVIEW LITERATURE (070)

A review of the research on techniques for increasing the novice's understanding of computers and computer programming, this paper considers the potential usefulness of five tentative recommendations pertinent to the design of computer literacy curricula: (1) provide the learner with a concrete model of the computer; (2) encourage the learner to actively restate the new technical information in his or her own words; (3) assess the learner's existing intuitions about computer operation and try to build on or modify them; (4) provide the learner with methods for chunking statements into smaller, meaningful parts; and (5) provide the learner with methods for analyzing statements into smaller, meaningful parts. It is concluded that, while results of cognitive research provide qualified support for the first two recommendations, more active research is needed on the other three. A bibliography lists 59 references, and appendices include seven statements used in a BASIC-like instructional booklet, examples of six types of test problems for a BASIC-like language, an example of an elaboration exercise, and data from a study included in the review. (MER)

**ED207550 IR009661

Analysis of Users' Intuitions About the Operation of Electronic Calculators. Report No. 80-4. Series in Learning and Cognition.

Mayer, Richard E.; Bayman, Piraye

California Univ., Santa Barbara. Dept. of Psychology.

1980 78p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC04 Plus Postage.
Document Type: RESEARCH REPORT (143)

A study designed to serve as an initial step in building a theory of computer literacy was conducted to provide new information concerning how humans think about calculators and to determine how individual differences in students' intuitions affect their understanding and use of the calculator. Thirty-three expert and 33 novice calculator users were asked to fill out questionnaires, and then to predict what number would be in the display of the calculator after a series of key presses for 88 math problems. Analytic techniques of cognitive psychology were applied to assess the performance of the subjects compared to the performance of the calculators, as well as subject performance in light of the type of calculator used, and the amount of previous experience with calculators. Results indicated that there were tremendous individual differences among users in their interpretations of the logic of the calculator's operating system. Future work is recommended to determine whether intuitions, once diagnosed, can be altered through instruction, and to determine whether people with certain intuitions can use their calculators more creatively or learn a new computer language more efficiently than people with other sets of intuition. Nineteen references are listed and supporting data are appended. (MER)

**ED191710 SE031934

Calculators and Computers in the Classroom: Select Summaries of Current Education Topics. Know-Pak No. 17.
Moursund, David; East, Phillip
Oregon State Dept. of Education, Salem.
Oct 1979 27p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)

The usage and availability of calculators, computers, and related instructional materials are presented. This publication is a Know-Pak, a summary of materials and articles that is part of a series of information packets developed by the Oregon Department of Education. Topics covered include: (1) a forecast of a computer literacy crisis in American education; (2) model goals for computer education; (3) sample program course and instructional goals; (4) computer use in Oregon; (5) computer and calculator terminology; (6) calculator use in elementary schools; (7) available textbooks; (8) sample problems; and (9) lists of current computer assisted instruction projects. Annotated bibliographies on articles from the "Oregon Computing Teacher," selected summarized reports from the Oregon Council for Computer Education, and other sources of information such as publications, organizations, and people active in Oregon's computer education programs are also included. (MP)

**ED211073 IR009893

How to Run a Computer and Keep Up with It. A Co-Ser Project.
Newton, David J.; And Others
Cortland-Madison Board of Cooperative Educational Services, Cortland, N.Y.
1981 124p.; Best copy available.
EDRS Price - MF01/PC05 Plus Postage.
Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141); AUDIOVISUAL MATERIAL (100)

These curriculum materials are designed for teachers of students in grades six through nine to use to teach general computer literacy and rudimentary programming in BASIC. Sections on history, what microcomputers can do, and computer anatomy have been written so they can be copied and placed in the hands of the students in the intended audience, together with the programming lessons, which include objectives, activities, and suggested exercises. The 11 lessons review the beginning commands and steps in using a computer and show how to write programs to print a statement, calculate using arithmetic, use variables, note differences in the order of operations, input numbers, input and output alphanumeric variables, use REM, TAB, and GOTO statements, decisions processes, loops, and counters and/or adders. A list of 22 BASIC commands, the names and descriptions of 46 prepared programs, and the answers to the lesson exercises follow the lessons. Also included are ten quizzes and a final quiz, 60 enrichment exercises, instructions for a computer quiz maker program, directions for writing a program for multiple choice quizzes, a glossary of 54 computer terms, and instructions for the care and handling of diskettes. These materials were prepared for use with four types of microcomputers: APPLE, HP-2000, PET, and TRS-80. (CHC)

**ED213400 IR010022

Teaching Computer Literacy in an Elementary School: A Comparison of Two Methods Using Microcomputers. Report No. 81:18.

Nordman, R.; Parker, J.

Educational Research Inst. of British Columbia, Vancouver.

Sep 1981 165p.; Best available copy.

Available from: Educational Research Institute of British Columbia, Suite 400, 515 West 10th Ave., Vancouver, B.C. V5Z 4A8 ($15.00).

EDRS Price - MF01/PC07 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

This report compares two methods of teaching BASIC programming used to develop computer literacy among children in grades three through seven in British Columbia. Phase one of the project was designed to instruct children in grades five to seven on the arithmetic operation of writing simple BASIC programs. Instructional methods included using job cards, program cards, and large group instruction, and each student was allowed to spend an equal amount of time on the computer. Phase two was also designed to teach arithmetic operations of BASIC programming, but this time worksheets and take home assignments were the major instructional tools used with children in grades three through five. Moreover, students were only allowed to use the microcomputers as needed to complete assignments. Results indicated that children from both groups made gains in their comprehension of programming, but that this was not necessarily related to age or instructional methods. It was concluded that LOGO type languages may be better for working with elementary school students, with BASIC being reserved for more advanced stages of instruction. This report includes pre-and posttests, scores, job cards for the lessons, and background material for teaching computer literacy prior to programming. (MER)

**ED216679 IR010153

Computer Literacy for All High School Students.

Patton, Robert; And Others

2 May 1981 26p.; Best copy available.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141)

This description of how one high school in Wisconsin is using computer equipment and instructors to further computer knowledge and awareness among students, teachers, and adults of the community, details a two-week computer literacy unit taught to students enrolled in geometry classes. An outline of the unit is provided along with daily lesson plans, transparencies used, and daily homework work sheets. (LLS)

**ED208847 IR009756

Developing Standards and Norms for Computer Literacy. Discussion Paper 06/80.

Wright, Annette

British Columbia Dept. of Education, Victoria. Information Service.; JEM Research, Victoria (British Columbia).

Jul 1980 75p.; For related documents, see IR 009 753-758 and IR 009 777.

EDRS Price -MF01/PC03 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141); TEST, QUESTIONNAIRE (160)

This paper provides educators with a general perspective on computer literacy and an in-depth examination of the Computer Literacy Awareness Assessment conducted by the Minnesota Educational Computing Consortium (MECC). Addressing computer literacy as part of the ongoing use of computers in a classroom setting is identified as the most reasonable approach for introducing computer literacy to British Columbia. Computer literacy is then defined and discussed in terms of specific experiences or desired outcomes of literacy. The remainder of the paper discusses the development of the Minnesota Assessment, including purposes of the test and its structure. The test comprises three parts: (1) affective assessment--six scales of five items each; (2) cognitive test--53 true/false or multiple choice items; and (3) survey of background variables--37 items. The appendices include the validation of the test; administration and scoring norms; a priori cognitive sub-test; revised cognitive sub-tests; reliabilities, means and standard deviations for cognitive sub-tests; intercorrelations and percentile norms of cognitive sub-test and revised sub-test; affective scales; and Computer Literacy Questionnaire. (CHC)

Content Area Applications: Economics

ED150057 SO010636

An Evaluation of the Cognitive and Affective Performance of an Integrated Set of CAI Materials in the Principles of Macroeconomics. Studies in Economic Education, No. 4.

Daellenbach, Lawrence A.; And Others

Wisconsin Univ., La Crosse. Center for Economic Education.

Feb 1977 86p.; Pages 74, 75 of Appendix B may not reproduce clearly due to small type size in original document

EDRS Price - MF01/PC04 Plus Postage.

Document Type: RESEARCH REPORT (143)

The purpose of this study was to determine the effect of computer assisted instruction (CAI) on the cognitive and affective development of college students enrolled in a principles of macroeconomics course. The hypotheses of the experiment were stated as follows: In relation to the traditional principles course, the experimental treatment will result in (1) no loss in general cognitive capabilities of the students; (2) superior analytical capability; (3) and more favorable student attitudes toward economics. The experimental design for the course emphasized the substitution of CAI for the traditional lecture-textbook approach. It involved two instructors each teaching a control and an experimental section. The experimental sections differed from the control sections in that the students were exposed to CAI materials which included tutorial lessons and simulations. The results indicated that exposure to integrated CAI materials had a significant positive effect on basic analytical ability. However, the materials were not able to produce significant results across all question types on a general cognitive instrument. Furthermore, the affective results clearly indicated no effect. In accounting for these results, it is pointed out that the CAI materials were not uniform, that they were optional, and that the data base was relatively small. (Author/JK)

Content Area Applications: English Composition and Literature

**ED191511 JC800153

RSVP: Feedback Program for Individualized Analysis of Writing. Research Report.

Anandam, Kamala; And Others

Miami-Dade Junior Coll., Fla.

1979 99p.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

Available from: Computer-based Instructional Development and Research, Miami-Dade Community College, 11011 S.W. 104th Street, Miami, FL 33176.

EDRS Price - MF01/PC04 Plus Postage.

Document Type: RESEARCH REPORT (143); PROJECT DESCRIPTION (141)

A study involving English Composition and Remedial English classes at five community colleges was conducted during Winter 1978 to test the effectiveness of the Response System with Variable Prescriptions (RSVP) Program for Individualized Analysis of Writing, a software package designed to produce feedback statements that reinforce student learning and help correct writing errors. During the study, six sections of Freshman Composition and three sections of Remedial English were taught with RSVP. In these classes, faculty examined student essays, marked computer cards with the errors needing prescription statements, and distributed the RSVP-generated reports to their students. An equal number of sections in both courses were taught without RSVP, and both groups of students underwent two objective and one essay test at the beginning and end of the course. At the end of the quarter, questionnaires were distributed to determine student attitudes toward writing and the class itself, and to solicit faculty opinions concerning the RSVP system. Major findings indicate that while most students and five of the nine instructors rated the RSVP system positively, pre-and post-essay-tests did not yield statistically significant differences between the RSVP and non-RSVP groups. Questionnaires and sample feedback statements are appended. (JP)

**ED217489 CS207052

The Computer Kids and Composition.

Arms, Valarie M.

Mar 1982 9p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (33rd, San Francisco, CA, March 18-20, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

Technical writing instructors at Drexel University (Pennsylvania) use computers to excite students about something they usually regard as a chore. Most of the students are engineering majors, but do not necessarily know how to use a computer. However, they accept the necessity of following a logical set of commands, and that every program must be "debugged." The course makes revision as integral to writing as debugging is to programing. The course still emphasizes attention to audience and use of visuals, as well as rhetoric, but access to a word processing lab encourages students to revise and make corrections on a screen that they might be reluctant to make on a typewritten page. The system also has an automated dictionary, that seeks out misspelled words in the text. The software automatically sets up document formats so students need not be concerned with margins, tabs, centering, or the psychological defeat of a blank page. In a traditional class, students find themselves spending so much time recopying some parts of their papers that they have little motivation to critically read and revise what they have written. For engineering students who typically write weekly lab reports, progress reports, or proposals, updated versions can be generated by the word processing program without rewriting the whole report, and documentation for research projects can be stored, and arranged in a variety of ways. (HTH)

ED189624 CS205704

Automated Dictionaries, Reading and Writing; Chairman's Report of a Conference on Educational Uses of Word Processors with Dictionaries (New York, New York, June 14-15, 1979).

National Inst. of Education (DHEW), Washington, D.C.

Dec 1979 31p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

This booklet summarizes a discussion of the opportunities provided by computerized information-handling technology to improve student achievement in reading and writing. The first section discusses the development and educational use of an automated dictionary (AD) that would allow a student to designate a word by typing it and receive information about it, either aurally by electronically generated speech or visually on a cathode ray tube screen. Also discussed are the possibilities of incorporating an AD in a word processor and the larger contexts in which these systems would function. The second section outlines the technical implementation of computer hardware and software in the classroom. The third section describes the kinds of scientific research in lexicography, linguistics, psychology, and education that will be required to realize the full potential of such systems. The original proposal made to the National Institute of Education suggesting the feasibility of ADs is appended. (AEA)

**ED188245 CS205678

Stimulating Rhetorical Invention in English Composition through Computer-Assisted Instruction.

Burns, Hugh L., Jr.

1979 68p.; Research prepared at the University of Texas at Austin. A number of tables may be marginally legible.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143)

Students in four freshman composition classes participated in a study to discover if computer assisted instruction (CAI) could be designed, developed, and programed that would effectively stimulate students' inventive processes. A computer was programed with questions drawn from Aristotles' enthymeme topics. Students in the experimental sections were taught the keyboard characteristics of a computer terminal and participated in practice sessions that reviewed the invention program's directions, specifically the direct commands and the question-asking features. Posttest administration began a week after the practice sessions. Students in the experimental sections were told, "If you think it, type it"; while those in the control sections were instructed, "If you think it, write it down." Both groups were given 30 minutes to complete the test. The primary findings of the study were: (1) CAI could be programed that would encourage growth both in the number and sophistication of ideas; (2) questioning dialogues could help students articulate, refine, and preserve their ideas; (3) these dialogues could ignore content in favor of perspective and still help students begin writing; and (4) theories of creativity based on intersecting content and perspective were programable. (FL)

**ED211998 CS206719

The Influence of Computer-Based Text Editors on the Revision Strategies of Inexperienced Writers.

Collier, Richard M.

Oct 1981 26p.; Paper presented at the Annual Meeting of the Pacific Northwest Conference on English in the Two-Year College (Calgary, Canada, October 22-24, 1981).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A study sought to determine the effect of computer-based text editing on the revision strategies of inexperienced writers. Four subjects, none of whom had experience with computers or word processors, were selected from an introductory college composition course and required to master the basic terminal functions that would be necessary for designing and revising a text page. Subjects gave the instructor an original, handwritten copy of an assigned essay with the topic, purpose, audience, and context defined. Subjects revised their essays on an AES-20 terminal with text editing keyboard and attached CRT unit and printer. During two of the sessions, the subjects were asked to revise as they provided a thinking-aloud protocol, while during the last session, the terminal screen was videotaped. Analysis of the strategies revealed during the revision sessions indicated that the use of the computer-based text editor increased the number and complexity of revision operations and encouraged greater manipulation of material at the word and phrase/clause domains, although this did not appear to affect the overall quality of the essays. The subject with the strongest writing skills excelled at the use of the computer for revision, while the subject with the weakest writing skills preferred more conventional methods of revision. (HTH)

**ED217490 CS207056

An Overview of the Computer as Teacher: A Progress Report of a Research Project to Introduce Diagnostic Testing and Computerized Instruction into the Composition Program at Northeast Missouri State University.

Cottey, Patricia

Mar 1982 21p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (33rd, San Francisco, CA, March 18-20, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Suspecting that computer assisted instruction (CAI) could help teach grammar to freshman composition students at Northeast Missouri State University (NMSU), three instructors received a research grant to begin a program of testing basic writing skills and to initiate CAI instruction for those students who needed help in the tested areas. A survey of available literature on the pros and cons of the computer as teacher helped create a clear idea of the computer's place in English instruction and led to the conclusion that the programs should be written by the teachers themselves. The first step in the project was the writing of a diagnostic test, which was completed in time to be administered to the second session summer composition students. Slight modifications readied it for use in the fall. Having become more familiar with NMSU's computer and the English program on it, the instructors conducted additional research through the ERIC system and examined the English programs available on the PLATO system. Both activities pointed up the great amounts of time and money needed to get a full-fledged program going. Still, the instructors were convinced that the computer could have a positive effect on NMSU's English program. (The areas covered by the diagnostic test and the ERIC materials surveyed are appended.) (JL)

**ED203872 IR009459

Using Microcomputers for Composition Instruction.

Cronnell, Bruce; Humes, Ann

Mar 1981 10p.; Paper presented at the Conference on College Composition and Communication (Dallas, TX, March 1981).

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)

One of the most valuable uses of microcomputers and word processors in composition instruction is in the teaching of writing revision. A number of activities can be carried out with these tools; for example, (1) after appropriate instruction on revision, students can be given prewritten text and asked to revise it on the word processors; (2) after a student has composed a text, the microcomputer can suggest that revisions be made; and (3) after a student has composed a text, the microcomputer can look for specific kinds of errors in the writing, mark the place where the errors occur, and require the student to correct them. Microcomputers and word processors may also be used to teach students sentence combining and how to generate and arrange content. (LLS)

**ED218940# FL013000

The Indiana Routing System: A PLATO Curricular Tool for Teachers.

Haugh, Rita; And Others
Illinois Univ., Urbana. Language Learning Lab.
Studies in Language Learning, v3 n1 p139-44 Spr 1981
1981 6p.
Available from: Not available separately, see ED 218 930.
Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

A new curricular router created to be more flexible, more user-oriented, and use less computer memory was developed in 1979. Although initially called the "Indiana Routing System" (TIRS), it has been renamed the "Indiana Manager of PLATO-Assisted Curricula." This new router permits any mixture of the instructional strategies of topic sequences, free indexes, and criterion-based instruction. In using the router, instructors proceed through the following tasks: choosing the topics, ordering them, deciding whether topics are elective or required, specifying the number of questions to be given on the pretest and posttest, establishing the passing score on the pretest, assigning the computer assisted curriculum to students, and examining student performance data. It is possible to develop a different curriculum for each student or for small groups of students. Curricular applications of the router in Indiana University's English Department have so far been confined to sections of special basic English skills composition classes, in which it complements and often supplements classroom activities or provides additional exercise in prerequisite skills. A similar application is found in the university's Learning and Study Skills Center, which provides short classes and tutorial help to develop student classroom and study skills such as notetaking, reading, and writing. All nine class sections of the journalism class, Writing for Mass Media, are using the routing system, which also can be used by instructors of any subject. (SW)

**ED218939# FL012999

CAI in Advanced Literature Class.

Hinton, Norman
Illinois Univ., Urbana. Language Learning Lab.
Studies in Language Learning, v3 n1 p129-38 Spr 1981
1981 10p.
Available from: Not available separately, see ED 218 930.
Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Ways that computer assisted instruction (CAI) can be useful in teaching English at upperclass and graduate levels are considered, with illustrations from PLATO lessons that have been composed and programmed. One lesson takes advantage of PLATO's graphic design capabilities, which enabled the teacher to design the runic figures and to show them in various sizes. The lesson includes a bibliography of materials on runes, a list of Wotan's magic runespells, and samples of runic inscriptions and runes in Old English poetry. Lessons have also been designed on Middle English, on Chaucer's vocabulary, idiom, grammar, and syntax. Assigning these lessons has resulted in quicker comprehension of Middle English, better pronunciation, and more class time to talk about Chaucer. A lesson on Yeats' poem, "Leda and the Swan," attempts to improve on the poetry lessons now available on PLATO. The lesson tries to solve the problem of narrowly focussed questions that CAI tends to use by choosing a poem for which a good deal of background information is necessary and creating interesting questions that can still require a rather small range of answers. In addition, another lesson attempts to deal with the question of (comparatively) free response. The student is asked to indicate as many words up to 10 as possible to deal with the theme of old age. Words from the poem which deal with old age have been stored in a set of variables. Each is assigned a numerical value according to the teacher's assessment of the degree to which each word is involved with the theme. The students' words are compared to the stored words, and the total scores for the words and phrases the student has entered are totalled and scored against a possible 50. (SW)

**ED198530 CS206110

Developing Stylistic Awareness on the Computer: A Tagmemic Approach.

Horodowich, Peggy Maki
Nov 1979 9p.; Paper presented at the Annual Meeting of the Midwest Modern Language Association (21st, Indianapolis, IN, November 8-10, 1979).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); TEACHING GUIDE (052); CONFERENCE PAPER (150)

The format of the Instruction Dialogue Author Facility (IDAF) computer program has been applied to teaching clause analysis in college writing classes. The IDAF program exercises a great deal of control over a writing student's progression through lessons. Each of the writing lessons consists of one or more exchanges between the instructor and the student. The IDAF program also stores statistics on individual lessons and permits instructors to revise lessons or to append materials for students with special needs. The format of the lessons is clause analysis, reflecting theory and practice related to tagmemic analysis. To encourage the composition process on the computer, students are asked to make use of subordinators to create complex and compound-complex sentences. Through this clause analysis approach to writing, students understand the options they have in creating their writing styles, options ranging from the centrality of the verb to the structure of information in cumulative or periodic sentence structures. Further, these students begin to see how to expand informational content by yoking closely related thoughts together by adding words or clauses that modify, explain, describe, or add details to propositions. (Appendixes provide examples from the lessons in the program.) (RL)

**ED192376 CS205899

Specifications for Composition Instruction. Technical Note.

Humes, Ann

Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.

18 Aug 1980 108p.

EDRS Price - MF01/PC05 Plus Postage.

Document Type: REVIEW LITERATURE (070)

This paper specifies the content of composition instruction, some of which can be incorporated into material to be presented by and practiced on a computer. It describes instructional outcomes within the context of an instructional model of the composing situation and discusses them under the following headings: (1) the composing problem, (2) setting goals, (3) generating ideas to write about, (4) arranging the information, (5) translating (the actual writing), (6) reviewing, and (7) feedback, such as peer critiquing, teacher comment, and formal assessment. An appendix describes important instructional techniques that can aid in the implementation of composition outcomes. (Author/FL)

ED183196 IR008138

Computer Applications in the Teaching of English. The Illinois Series on Educational Application of Computers, No. 19e.

Jaycox, Kathleen M.

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 57p.; For related documents, see IR 008 123-139.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

This paper is written to familiarize present and future English teachers with the current status of computer assisted instruction (CAI) in the teaching of English. Addressed both to practicing teachers who have little understanding of computers, and English education majors with computer science minors, it deals with programs written in BASIC. The first section is concerned with current attitudes about computers among English teachers, the need for computer literacy, and humanistic concerns regarding computers. The following section focuses on methodology in the teaching of English apart from any form of CAI. The final five sections deal with various aspects of instructional applications of computers which could augment the methods already described. Following each section is a list of suggested projects and activities which vary according to the learner's experience in teaching and/or programming. (Author/CMV)

**ED214583 JC820123

Teaching Writing with the Computer as Helper. AACJC Pocket Reader 2.

Kelly, J. Terence; Anandam, Kamala

American Association of Community and Junior Colleges, Washington, D.C.

1982 58p.; Tables with small, light print will not reproduce well.

Available from: American Association of Community and Junior Colleges, One Dupont Circle, NW, Washington, DC 20036 ($5.00).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: PROJECT DESCRIPTION (141)

An instructional management system, called Response System with Variable Prescriptions (RSVP), is described in this report as it is used at Miami-Dade Community College (MDCC). Following introductory material, the relevance of such a system to current educational issues is explored and the use of computer technology in education is discussed. The RSVP system is then introduced, and its applications in subject area instruction, student advisement, and other areas are reviewed. The RSVP Feedback Program for Individualized Analysis of Writing is the focus of the remainder of the report. The program description indicates that the sequence of activities in the writing program includes the following: (1) students turn in writing assignments; (2) the instructor chooses a level of achievement represented by the writing sample; (3) the instructor identifies the errors which should be addressed; (4) the instructor makes comments on the writing sample; (5) the computer generates exercises and feedback to address the identified errors; and (6) the RSVP feedback letters are distributed in class with the assignments. Samples of student writing and the RSVP materials generated by the teacher and computer are provided. The report then presents results of a field test of the RSVP writing program and a discussion of how the writing program has been implemented with particular groups of students. A bibliography of literature on RSVP is followed by concluding remarks on the success and future of RSVP. (KL)

**ED208415 CS206617

One Child's Learning: Introducing Writing with a Computer. A. I. Memo No. 575.

Lawler, R. W.

Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

Mar 1980 20p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This paper observes that computer access affects a child's learning significantly, and presents a case study of one child's use of the computer as an example of how computer-based introduction to writing might work. The case study highlights the suitability of computers for an introduction to writing that separates the structural elements of composition from content. Specific later developments of the subject's writing are offered to suggest that the child's earlier experiences in computerized writing remained important for learning writing forms, such as short stories and friendly letters. (RL)

**ED218945# FL013005

An Evaluation of Computer-Assisted Instruction for English Grammar Review.

Oates, William

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p193-200 Spr 1981

1981 8p.

Available from: Not available separately, see ED 218 930.

Document Not Available from EDRS.

Document Type: EVALUATIVE REPORT (142); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080) Geographic Source: U.S.; Illinois

The use of computer assisted instruction (CAI) at Indiana University to provide basic grammar review to beginning writing students, and the results of an evaluation of the PLATO system as a learning resource are described. At the time of the evaluation, the CAI curriculum in use was the Language Arts Routing System (LARS). The evaluation involved 24 students in an elementary composition course taught in the English department, 20 students in a beginning newswriting course taught in the journalism school, and 16 students enrolled in a non-CAI section of the same journalism course. A section of the journalism class using CAI and a non-CAI section were administered a standardized test of English at the beginning and end of the semester. Neither of the section instructors spent classroom time teaching grammar. At the end of the semester, the mean score of the non-CAI section was not statistically different than it had been at the beginning, while the CAI section's mean increased by 20 points, which was significantly higher than its starting mean. Results of PLATO pretests and posttests also show improvements in both the journalism and English CAI classes. On-line tests also provided a measure of the teaching effectiveness of 53 grammar areas that comprise the LARS curriculum on PLATO. At the end of the term, 35 of the students in the CAI sections completed questionnaires concerning their attitudes toward PLATO as a learning resource, and PLATO received high marks on nearly every attitude measure. Students compared PLATO to the following learning modes: small classes, self-instructional books, videotapes or films, lectures, and textbooks. (SW)

**ED218937# FL012997

Computer-Assisted Instruction in Latin and in English Vocabulary Development.
Scanlan, Richard
Illinois Univ., Urbana. Language Learning Lab.
Studies in Language Learning, v3 n1 p113-22 Spr 1981
1981 10p.
Available from: Not available separately, see ED 218 930.
Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Computer assisted instruction in Latin and in English vocabulary development, which is used at the University of Illinois-Urbana, is described. The computer portion of the beginning Latin course consists of 40 lessons which provide drill and practice in vocabulary, morphology, and syntax. The program can be used either as a classroom supplement or as part of an independent study course. Each of the 40 lessons has four sections--vocabulary, morphology, translation, and a self-test. Work on PLATO counts as one-quarter of the total course grade and is designed to increase efficiency in study and lengthen retention. The Latin composition program is designed as a complete review of Latin grammar through the medium of prose composition and can be used at any time after the first year of college or first 2 years of high school Latin. The program contains 31 lessons, which may be used separately from each other or in sequence, either as a classroom supplement or an independent study. Each lesson is divided into four parts--morphology, composition exercises, vocabulary, and a diagnostic self-test. In addition, a course in the enlargement of students' English vocabulary through the study of Latin and Greek roots and their derivatives uses a PLATO component. Advantages of PLATO-based instruction include: (1) the student has a choice of study areas and the sequence of the work; (2) immediate reinforcement or correction is provided; (3) drill items are randomized to reduce serial learning; (4) responses are stored by the computer and further work is determined on the basis of these replies; (5) sentence responses are judged at the orthographic, lexical, and syntactical levels; and (6) diagnostic tests are provided. (SW)

**ED214177 CS206786

A Computer Program for Invention and Feedback.
Schwartz, Helen J.
Mar 1982 10p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (33rd, San Francisco, CA, March 18-20, 1982).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

SEEN (Seeing Eye Elephant Network) is a computer program intended to help students write better essays by providing a heuristic for invention and a means for audience feedback. In the solo mode, the program prompts students to perceive what they have seen--that is, to consider the literary work in an active way. The program also remembers--like an elephant--what the students say in answer to the program's prompts. In the network mode, students can share their work and get feedback by seeing how their work compares with others' views or by getting other students' comments on their work. In a tutorial that is currently being set up for a character analysis, the solo mode prompts students to provide and consider evidence in support of their own hypothesis, while the network segment is designed to help the students sharpen their critical insights by giving and getting feedback. In the fall of 1981 the program was tested on students in an introductory world literature class to determine if the students would improve their essay writing after using the computer program. A preliminary analysis of the data suggests that the improvement between the computer group and the noncomputer group is not statistically significant. However, the writing of the computer group did become much longer and more detailed, while failing and marginal students seemed to improve on the essay exam quite dramatically. (HOD)

**ED196014 CS206008

Teaching Stylistic Simplicity with a Computerized Readability Formula.
Schwartz, Helen J.
1980 14p.; Paper presented at the International Meeting of the American Business Communication Association (Washington, DC, December 1980).
Sponsoring Agency: Oakland Univ., Rochester, Mich.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A study was conducted to test whether quantitative feedback would help students write with the stylistic simplicity appropriate to their audience and purpose without sacrificing other elements of good writing. Two business and technical writing classes received identical reading assignments, classroom activities, and writing assignments; but one class got feedback on their writing from a computerized readability formula, the Simplified Test Approach for Readability (STAR), which was based on the Flesch readability formula. Five assignments were tested in all, and a nine-point scale was used to assess appropriateness of stylistic simplicity. The results were suggestive but not conclusive. The overall achievement of students in the STAR group correlated more positively with scores on the stylistic simplicity scale than did the achievement of students in the control group. However, the control group scores on the stylistic simplicity scale were not highly predictive of overall achievement. That is, the control group students may have mastered stylistic simplicity, but their learning did not consistently correlate with overall achievement. Further analysis suggested that feedback to students about grade level equivalents in readability may have accounted for the relation of overall achievement to stylistic simplicity. (RL)

**ED213045 CS206771

Prewriting, Writing, and Editing by Computer.

Wresch, William

Mar 1982 14p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (33rd, San Francisco, CA, March 18-20, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Four recently developed computer programs can help students with the composition process. The first, a prewriting program, helps students prepare to write by asking them a series of questions, similar to those an instructor would ask, intended to help them think more deeply about their subject. The second writing program also contains prewriting questions, but attempts to show subsequently how information gathered during the questioning can be structured during the actual writing stage by creating a model rough draft of the essay. The third program, developed as a text editing system for journalism assignments, relies on a matching routine that takes a series of predetermined key words and searches for them in the student's news story. The program acknowledges pertinent information and points out errors with an explanation when the pertinent information is missing. In the fourth program, also a text editing program, the computer "reads" the entered essays, then prints out statistics on sentence length, use of prepositions, and use of "to be" verbs and nouns ending in "tion." The statistics are followed by an appropriate warning about convoluted sentences or the excess of the "tion" nouns or "to be" verbs. These programs do not actually understand the essay, and better programs will be developed as more people contribute to the task; but they do successfully take students through their assigned phases in the writing process, freeing the instructor for more individualized instruction. (HTH)

Content Area Applications: Foreign Languages

ED138087 FL008455

Computer-Assisted and Programed Instruction in Foreign Languages: A Selected, Annotated Bibliography. CAL-ERIC/CLL Series on Languages and Linguistics, No. 50.

Birdsong, David

ERIC Clearinghouse on Languages and Linguistics, Arlington, Va.

Apr 1977 24p.; For related document, see FL 008 450

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: BIBLIOGRAPHY (131)

The documents listed in this annotated bibliography on computer-aided and programmed instruction in foreign languages appeared in RIE during the period from April 1971 through February 1977. The selection comprises reports on conference and research projects, papers concerned with theory and application, and descriptions of teaching materials. The listing is selective rather than comprehensive, and each entry includes, when available, author's name, title of article, author's professional affiliation, date of completion or publication, number of pages, and ED number. (CLK)

**ED208711 HE014299

Computer-Assisted Instruction in Arabic at the University of Texas at Austin.

Abboud, Victorine

1981 32p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

A computer-assisted instructional program to teach the Arabic writing system and elementary vocabulary and comprehension, which was developed at the Center for Middle Eastern Studies at The University of Texas at Austin in cooperation with the university's College of Liberal Arts, is described. Among the benefits of the computer-assisted approach are that the active participation of the student maintains interest and alertness, quick reinforcement and feedback promotes learning correct answers and reduces the possibility of repeating the same error; and the student can follow a flexible learning pathway suited to individual capacities and needs. The following instructional design model has been developed at the computer-assisted instructional laboratory: describe the contractual agreement between staff and student; describe the order of presentation, the number of tests, the conditions for success in a test, the branching techniques, and the number of frames in each section; write a clear definition of the goals and behavioral objectives and carefully analyze the course content; describe what a learner must do to demonstrate that the objectives have been reached; specify the learning hierarchy and intermediate objectives needed to reach the terminal objectives; determine the individualizing techniques to be used; and choose the interface techniques. It is suggested that correct analysis of the content and objectives of the course forms the foundation for choosing the most appropriate display of subject matter, response techniques the student can use, and subsequent feedback by the computer. Appended materials include a description of the computer-assisted instructional program for modern standard Arabic, including sample frames, and a reprint of an article that describes the writing system ("The Computer as an Instructional Devise for the Arabic Writing System," 1972, by Victorine C. Abboud). (SW)

**ED218944# FL013004

A Rather Intelligent Language Teacher.

Cerri, Stefano; Breuker, Joost

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p182-92 Spr 1981

1981 11p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Characteristics of DART (Didactic Augmented Recursive Transition), an ATN-based system for writing intelligent computer assisted instruction (ICAI) programs that is available on the PLATO system are described. DART allows writing programs in an ATN dialect, compiling them in machine code for the PLATO system, and executing them as if the original code was written in TUTOR (the language of PLATO). Characteristics of DART are: (1) data and program are merged but differently represented; (2) data are organized as semantic networks; (3) percepts and sophisticated input-output interface are available; (4) acts reflect choices for the construction of an instructional theory; (5) DART has its own editor and an on-line authoring guide; (6) DART facilitates stacks and queues but can also handle lists; and (7) DART is a tutor-based system and runs on PLATO. The first operational program written in DART teaches the conjunctions of subordinate classes in a foreign language (Dutch, Italian, English, and French). ELISA (Example of Linguistics Interaction Suitable for Augmentation) is the program that teaches conjunctions in foreign languages. It consists of three main phases--presentation, assessment, and test. By collecting subnetworks, a library of didactic programs can be filled for the development of notions and theories of instruction. One of the main problems in developing intelligent computer assisted teaching programs is the understanding and representation of misconceptions. Adequate tutoring can only be accomplished if misconceptions can be diagnosed and remedied. The syntax of DART is outlined, and part of the concept network of ELISA is graphically displayed. (SW)

**ED218942# FL013002

Technical Aspects of Computer-Assisted Instruction in Chinese.

Cheng, Chin-Chaun; Sherwood, Bruce

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p156-70 Spr 1981

1981 15p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)

Computer assisted instruction in Chinese is considered in relation to the design and recognition of Chinese characters, speech synthesis of the standard Chinese language, and the identification of Chinese tone. The PLATO work has shifted its orientation from provision of supplementary courseware to implementation of independent lessons and experimentation with computer technology for Chinese. The Chinese characters have to be specially designed and referenced because it is not possible to associate an individual symbol with a key on the keyboard. Since the characters are composed in the correct stroke order, they can be used to teach the student how to write each of them. A program has been developed that can recognize a test sample of 150 hand-drawn characters. The user writes a character with a finger on the screen, pausing between strokes. Seven possible strokes and the numbers associated with them are identified. The input stroke pattern is searched in the database of stroke patterns for the best match. The synthesis program takes prestored or typed-in strings in Chinese pinyin, converts them to Votrax phoneme and pitch codes, and then routes the codes to the synthesizer for speech production. A pitch extracting device constructed locally and interfaced with PLATO has been used in an experiment on automated recognition of Chinese tones. The hardware modifies the input wave form and counts the length of time between peaks. The time is stored in the memory and then sent to the PLATO computer for processing. Since Chinese is a contour tone language, the shape of the tones is taken into consideration in the identification process. (SW)

**ED218934# FL012994

A Computer-Assisted Program for the Teaching of Modern Hebrew.
Cole, Peter; And Others
Illinois Univ., Urbana. Language Learning Lab.
Studies in Language Learning, v3 n1 p74-91 Spr 1981
1981 18p.
Available from: Not available separately, see ED 218 930.
Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

The use of PLATO computer assisted instructional materials to teach Modern Hebrew at the University of Illinois is considered. To enable students to progress toward competency with the full range of styles in use in Israel including conversation, journalistic, and literary Hebrew, an emphasis is placed on informal spoken Hebrew during the first year. The classroom work is accompanied by about an hour and a half of computer practice a week. The only portion of the PLATO curriculum that does not allow students complete freedom with regard to what exercises they wish to do is the grammar section. After completion of an exercise, the student is told the score which is recorded for the teacher, but which is not used in grading. Students may be required to do an additional exercise on the same topic. Word games that draw upon the student's vocabulary knowledge and a spelling bee where students challenge one another are included. Students may elect to do a crossword puzzle, the content of which reflects the vocabulary of the unit studied that week. They may also choose to do review drills on the Hebrew verb conjugations and the Hebrew number names. Recently the TUTOR programming language has been modified to incorporate system-level implementation of leftward written texts and student responses, and the PLATO system uses a special character set to write in Hebrew. Since the PLATO markup algorithm was designed primarily to deal with English phonetic structure and orthography, it does not properly handle several common errors made by Hebrew students. Future plans may include instruction in Biblical Hebrew, which would enable students of Modern Hebrew to learn the grammatical differences between the two forms of Hebrew. (SW)

**ED193940 FL011905

Two-Pronged Error Analysis from Computer-Based Instruction in Latin.
Culley, Gerald R.
1979 8p.; Paper presented at the Delaware Symposium on Language Studies (October 18-20, 1979).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A technique for Latin instruction has been developed which uses the Programmed Learning for Automated Teaching (PLATO) computer system. The program, which conjugates Latin verbs and declines nouns and adjectives, represents an improvement over traditional computer teachers. While older systems only told the student when he had made an error, the PLATO program can tell hom what kind of error he has made. There are several benefits to this. Once the computer is provided with a set of noun and adjective bases and case endings, it can combine these elements to produce correct Latin forms. A small amount of computer memory is needed to produce a great number of Latin forms, thus combining the contents of many lessons into one. Another benefit is error analysis. Since the computer knows what kind of error the student makes and tells him, the student can concentrate on his problem areas. As the computer tabulates the different types of errors, the instructor can discern problem areas by studying relative frequencies of these errors. The program thus assists Latin instruction at both ends, and can be a valuable tool for pedagogy. (PJM)

**ED218946# FL013006

Computer-Based Analysis of Individual Learning Characteristics.

Curtin, Constance; And Others

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p201-13 Spr 1981

1981 13p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Learning characteristics of students undertaking computer assisted instruction using the PLATO system were assessed for five Russian courses at the University of Illinois. Since the computer allows accurate measurement of the interaction of the student with the material being learned, four measures of student performance were assessed--error rate, rate of interaction with the material, total time, and review time. These measures were compared to each other as well as to semester grades in Russian courses. For five courses, the error rate during the learning process was significantly and negatively correlated with final grades (i.e., students with a high error rate had low grades and vice versa). Final grades were based on instructor produced and administered measures rather than on computer materials. For each course, the highest grades were received by students with a low error rate and high interactions per minute (i.e., the number of times in each minute that the student requests a response from the computer). For all five courses, students with a low error rate and high interaction had a greater percentage of review time than did students with a low error rate and low interaction. In other words, more review led to a better grade. The total time spent at the computer terminal was not a significant indicator. Some students put in a great deal of total time and review time and still received the lowest grades. The data support a model for predicting performance of superior language students (those who learn in a fashion which minimizes errors) but show a need for further investigation of the performance characteristics of weaker language students. Four groups of students were distinguished based on error rate and interaction rate. (SW)

**ED218935# FL012995

PLATO Sitcom Dialogs for Russian.

Dawson, Clayton; Provenzano, Nolen

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p92-97 Spr 1981

1981 6p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Situation comedy (sitcom) dialogs that are included in PLATO lessons for first year Russian students are described. These comprehension exercises make use of both the touch panel and the audio capabilities of PLATO. The sitcom dialogs were written by a native speaker of Russian and are based on the vocabulary in the textbook plus a small number of additional items presented on PLATO. The sitcom dialogs generally have a humorous touch and usually consist of two or three short scenes. They come at the very end of the PLATO lessons and are designed to enhance the student's reading-listening comprehension abilities, as well as to expand passive vocabulary knowledge. Introductory pages present the title of the sitcom dialog in both Russian and English, plus a very brief statement in English setting the scene. Next, the new Russian vocabulary is presented with English translation which also provides some clue to the story. Students can press the NEXT key and see the first scene unfold in Russian, line by line, until the entire conversation appears on the video screen. As each new line appears on the screen with new items underlined, the student automatically hears it through earphones, spoken at ordinary speed. The student can press to hear and see it again or may see just the items in translation, the entire sentence in English translation, or the Russian sentence. The student sets the pace and may press a key to move to a set of questions about the sitcom. Any time the student encounters difficulties, the HELP key can be pressed to see the dialog again, the DATA key to see the new word list, and the LAB key to practice the dialog. Questions are in the light tone of the sitcoms and answers include a brief commentary. (SW)

ED139269 FL008573

The Potential and Limitation of Computer Assisted Instruction in the Teaching of Foreign Languages.

Haas, Werner

Nov 1976 31p.; Paper presented at the annual meeting of the American Council on the Teaching of Foreign Languages (New Orleans, Louisiana, November 1976) ; Print quality may be marginally legible

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150)

This paper discusses the potential and limitations of computer-assisted instruction (CAI) and its relationship to individualized language instruction. Two tutorial programs are described which are designed to teach German grammar to first-year students. Both are fully integrated with the course classroom, lab, homework, and textbook. One salient feature of CAI is its compatibility with principles of individualized instruction, e.g. pacing, one-to-one tutoring, branching technique, and insistence on performance level. Its greatest potential lies in its use in remedial work. Although at present only reading and writing skills are incorporated, there is no reason why oral comprehension and speaking cannot be included in the future. For the most part student reaction to CAI is favorable. Limitations of CAI include: (a) lack of sufficient testing and evaluation guidelines at present; (b) logistics problems; and (c) uneasiness on the part of teachers who view CAI as a threat to their job. An index and samples of German pattern practices are appended. (AM)

**ED218931# FL012991

Language Study and the PLATO System.

Hart, Robert

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p1-24 Spr 1981

1981 24p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Technical aspects of the PLATO system, the language work done on PLATO thus far (specifically in foreign languages), and areas for further research in computer-based language instruction are reviewed. PLATO-IV, designed and implemented by the Computer-Based Educational Research Laboratory of the University of Illinois at Urbana-Champaign, is unusual in being a large interactive system designed solely for instructional use. On-line management and administration of instruction with PLATO-IV has been accomplished by group files and router files, which respond to an increasing need for centralizing instructional sequencing logic. Additional management developments include an instructional management software product called "PLATO Learning Management," developed by Control Data Corporation; various PLATO on-line communications facilities that aid in course administration; and site-management software available with PLATO IV. The only programming language available for interactive use on PLATO IV is TUTOR. Another valuable contribution to language instruction is the TUTOR "answer judging" algorithm. TUTOR has evolved a set of file and database manipulation capabilities and also offers a built-in data collection system. PLATO-compatible micro-processors exist in the form of several intelligent terminals. Most PLATO language materials have been developed by practicing language teachers. Examples of PLATO-based curricula developed for a number of languages are identified. After considering techniques for presenting a single topic through PLATO-based language instruction and evaluation needs for computer materials, attention is directed to future directions, including intelligent processing of grammar and meaning and assessment of grammar competence. (SW)

**ED218933# FL012993

Computer-Based Instruction in Elementary Hindi.

Kachru, Yamuna; And Others

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p54-73 Spr 1981

1981 20p.

Available from: Not available separately, see ED 218 930.

Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

Computer-assisted instruction for Hindi courses at the University of Illinois is described in relation to the technical aspects of programming Hindi on the PLATO system and the curriculum components. The program focuses on review of the materials already covered in class and building understanding of a number of grammatical constructions by using them in varied exercises. To create the Hindi, nonroman alphabet, it was necessary to create images of the various letters. Each character image is a particular dot configuration created using a system supported editor. Some Hindi letters are composed of two character images. So that the student does not have to press nine or more keys for each letter, PLATO intercepts a key press and substitutes in its place the sequence of key presses assigned by a microtable. The Hindi materials make extensive use of the TUTOR "answer" and "wrong" commands. A decision was made to use English-Hindi correspondences as the starting point for the keyboard design. The current materials consist of 20 instructional lessons that teach the keyboard and provide practice with phonemic discrimination of syllables, grammar, and vocabulary. Two types of exercises have been programmed--exercises that are text bound that utilize grammatical construction, vocabulary, and context of the text and exercises that utilize the grammatical constructions of the texts, and draw upon the set of vocabulary encountered up to that point. Exercises focus on inflection of nouns; imperatives; optative, present habitual, present progressive, and future tenses; word-order; number, gender, and person agreement; sentences with dative subjects; and certain modal constructions. (SW)

**ED217732# FL013022

Computer-Based Analysis of Open-Ended Foreign-Language Test Items.

Lindblad, Torsten

Sep 1981 13p.; In its: Practice and Problems in Language Testing. Proceedings of the International Language Testing Symposium of the Interuniversitare Sprachtesgruppe (4th, Essex, England, September 14-17, 1981).

Available from: Not available separately; see ED 217 724.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

The recent psycholinguistic-sociolinguistic trend in foreign language teaching indicates a shift of interest away from quantitative data towards qualitative information of different kinds. Validity and relevance are stressed and so new test formats are demanded, as well as new methods of dealing with student answers. Item analysis techniques used to study multiple-choice items yield facility and discrimination indices and can be studied with a computer. Scoring an open-ended test is difficult and time-consuming. Therefore a system of computer programs for the "feeding-in" of tests and their statistical processing, called PRINS, was developed. In this program, all student answers are fed into the computer by a typist, then a print-out of all student answers, item by item, is called for. After the scoring key is fed in, the student answers can be compared with it. The lists produced are discussed by test constructors who decide on various grading procedures. The PRINS computer program is also being used for test construction, discussions on acceptability, cloze testing, and research. These uses are discussed and examples of test items; item analysis data, and lists of student responses are provided. (AMH)

**ED218932# FL012992

Reflections on the Use of Computers in Second-Language Acquisition.

Marty, Fernand

Illinois Univ., Urbana. Language Learning Lab.

Studies in Language Learning, v3 n1 p25-53 Spr 1981

1981 29p.

Available from: Not available separately, see ED 218 930.

Document Type: JOURNAL ARTICLE (080)

Conditions under which using computers can help improve the study of foreign languages are discussed. Attention is limited to a consideration of a language course that aims at giving students a high level of accuracy in listening comprehension, oral expression, reading comprehension, and written expression. The following questions are addressed: (1) Will computerized instruction reduce the number of language teachers? (2) How can we measure the effectiveness of computerized instruction? (3) Under what conditions will a student decide that the computerized materials are valuable? (4) What gains can the student expect? (5) How can the foreign language teacher develop materials? (6) What are the implications for the future of computerized instruction in second language acquisition? The following minimum requirements for working with computerized materials are advocated: When beginning to work, the student should be returned to the exact point that the last session ended; the student should be free to interrupt an exercise and proceed to another one; at the beginning of each exercise, the student should be told what the purpose of the exercise is and how many sentences it contains; the student should have the option of typing the answer or viewing the correct answer; and if the student types an incorrect answer, the student should be guided into correcting errors with the minimum of help. It is suggested that TUTOR, the computer language used on the PLATO system is superior to other computer languages now in general use but it still lacks some of the features necessary to facilitate the performance of essential operations such as separating roots from affixes. (SW)

ED216546 FL012939

The Foreign Language Teacher: The Lifelong Learner. Northeast Conference on the Teaching of Foreign Languages (29th, New York, NY, April 1-4, 1982).

Mead, Robert G., Jr., Ed.

Northeast Conference on the Teaching of Foreign Languages, Inc., Middlebury, Vt.

1982 158p.; For related documents, see FL 012 940-945.

Available from: Northeast Conference, Box 623, Middlebury, VT 05753 ($7.95).
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Language: English; French; German; Italian; Spanish
Document Type: CONFERENCE PROCEEDINGS (021); BOOK (010)

The articles and presentations in this publication relate to the general theme of the 1982 Northeast Conference, the foreign language teacher as a lifelong learner. The concept that in the best teachers learning and teaching form a progressive continuum, and that learning and teaching occur simultaneously is the basic assumption underlying all the presentations, workshops, and seminars. This report is divided into four sections. The first deals with the less-commonly taught languages as well as ideas for intensive training in them. The second treats contemporary cultures, specifically French, German, Italian, and Spanish. Part three concerns teaching and testing, with articles on merging teaching methods and textbooks, and proficiency testing in second language classrooms. The final section deals with technology and the foreign language classroom, with special attention to the use of audiovisual materials and techniques and microcomputers. (AMH)

**ED208670 FL012588

Beyond A-Level in the Teaching of French.
Sanders, Carol, Ed.
Centre for Information on Language Teaching, London (England).
1981 72p.; Papers presented at the Conference on the Teaching of Post A-Level French in the United Kingdom (United Kingdom, 1979).
EDRS Price - MF01/PC03 Plus Postage.
Language: English; French
Document Type: CONFERENCE PROCEEDINGS (021); RESEARCH REPORT (143)

The papers in this volume discuss practical approaches to some of the current problems of degree-level language teaching. Section one discusses non-literary registers in advanced language teaching including the use of texts in teaching, suggestions for a course in practical sociolinguistics, and exercises for advancing from paraphrase to an awareness of different language registers. Section two, focusing on new horizons in oral work, reviews interpreting as an oral exercise in oral fluency, group stimulation exercises in advanced language teaching, and examinations for testing French language proficiency. Section three presents course materials for degree work, reports on the revision of a course book in answer to the needs of language students, and discusses an integrated course in oral and written French. Section four reviews developments in self-instruction including using a computer to supplement classroom instruction and self-instructional materials in the language laboratory. The appendices include a report on a questionnaire on French language teaching, and a list of conference sessions and participants. (Author/JK)

ED218937# FL012997

Computer-Assisted Instruction in Latin and in English Vocabulary Development.
Scanlan, Richard
(See Content Area Applications: English Composition and Literature)

**ED218938#

PLATO Esperanto Materials.
Sherwood, Judith
Illinois Univ., Urbana. Language Learning Lab.
Studies in Language Learning, v3 n1 p123-28 Spr 1981
1981 6p.
Available from: Not available separately, see ED 218 930.
Document Type: PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055); JOURNAL ARTICLE (080)

A summary is presented of types of Esperanto materials available on PLATO--a general overview section, a picture introduction, lessons that accompany a textbook, vocabulary drills, crossword puzzles, dictation drills, reading practice, and a concentration game. The general overview lesson gives a comprehensive summary of the history and grammatical structure of Esperanto. Picture introduction and the crossword puzzle are designed to present some simple exercises using no English explanations. The pronunciation drills can be used with audio disks, with Votrax speech synthesizer, or with screen explanations only. One section of the picture vocabulary drills uses line drawings, but most use character sets. The PLATO series is designed to parallel text chapters, and it covers all of the material without duplicating any of the examples or exercises from the test. The nonpicture vocabulary drills and the crossword puzzle lessons use a unique and relatively new feature of PLATO: processor lessons. Instead of choosing a lesson and selecting an appropriate database from within the lesson, it is now possible to choose the database directly, without complicated codeword checks or interlesson transitions. The vocabulary drill enables students to see a word and touch the matching definition, see a definition and touch the matching word, see a definition and type the matching word, hear the word and touch the word or definition, or type the word as in a dictation drill using a speech synthesizer. The reading lessons present real stories, articles, or essays, and the student can page forward or backward through the story, and can request the computer to define unfamiliar words (by roots and grammatical endings). (SW)

**ED202227 FL012299

Possible Pedagogical Applications of a Talking Computer Terminal for the French-Speaking Blind to Foreign Language Teaching.

Trescases, Pierre

Apr 1980. 20p.; Paper presented at the Annual Kentucky Foreign Language Conference (33rd), Lexington, KY, April 24-26, 1980).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)

A computer system developed as a database access facilitator for the blind is found to have application to foreign language instruction, specifically in teaching French to speakers of English. The computer is programmed to translate symbols from the International Phonetic Alphabet (IPA) into appropriate phonemes for whatever language is being learned. In the case of French, the resulting "vocalization," while not efficient enough to be a good guide to the details of French pronunciation, is conducive to the construction of exercises designed to teach phoneme-grapheme correspondence. A table of rules for translation from French text to the IPA offers the advantage of presenting the graphical-sound correspondences of standard French in a very concise manner, with only a few constraints. The insertion of a frequency list of the 5,000 most used words in French makes the program further conducive to a great variety of exercises involving vocabulary learning. (JB)

Content Area Applications: Geology

**ED205145 HE014214

Computer Assisted Instruction in Geology.

Lepp, Henry

Jul 1981 8p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price -MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

The development of a computer self-test program in geology at Macalester College, Minnesota, is described. Based on the philosophy that tests, particularly those involving no grading, are useful study devices, computers are used to make tests available to students. Ten lessons have been developed on different topics in geology, and the computer program for handling multiple choice tests is written in BASIC. Additionally, the number of times a question is tried and the number of times the correct answer is selected as a first choice is recorded in order to help determine how much class time to devote to various course topics. Microcomputers were implemented to enable the use of graphs, cross sections, or maps. Among other questions, the lesson asks students to arrange the rock units and the periods of erosion, folding, and faulting in order of relative age. Student reactions to the use of the computer were assessed based on questionnaire responses. The computer tests and lessons are used as an addition to the conventional lecture, discussion, and laboratory approach. The chief benefits of the computer lessons are: they provide a good means for review of subject matter, they help to identify problem areas, the computer recordkeeping provides the instructor with information on how well the class is learning various concepts and principles, and most of the students taking the computer tests or lessons have had no previous computer exposure. (SW)

Content Area Applications: Guidance and Career and Vocational Information (Counseling)

**ED204624 CE029596

Sample Competency Based, Modularized Instructional Systems and Systems Components. Instructional Management Systems. Components Review.

Dunn, James; Mitchell, Karen

Cornell Univ., Ithaca, N.Y. Inst. for Occupational Education.

1981 27p.

Sponsoring Agency: New York State Education Dept., Albany. New York Research Coordinating Unit.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

This paper describes competency-based systems and system components in vocational and occupational education and other areas of elementary, secondary, and postsecondary education. Seven systems of competency-based instruction are discussed: Program for Learning in Accordance with Needs, Individually Prescribed Instruction, Individually Guided Education, Programmed Logic for Automated Teaching Operations, Computer Curriculum Corporation's CCC 17 Systems, Bell Lab's individualized and group instruction systems, and Oakland Community College Cognitive Style Mapping Program. Three newly emerging systems are also described: Individualized Mathematical Systems, Kettering Secondary School Improvement Project, and Challenge Education. Seven career guidance and information systems are described: Planning Career Goals; AIR Career Guidance Program; Information System for Vocational Decisions; Discover Foundation, Inc.; CHOICES; Career Planning and Support System; and System of Interactive Guidance and Information. Curriculum materials in occupational and vocational education examined include those developed by the Mid-American Vocational Education Curriculum Consortium, Vocational Technical Education Consortium of States, and 11 other educational institutions or agencies. Assessment systems described are the California Test Bureau's (CTB) ORBIT (Objective Referenced Bank of Items and Tests), Houghton Mifflin's SCORE, Educational Testing Service's Program for Assessing Youth Employment Skills, and NOCTI (National Occupational Competency Testing Institute). CTB's data management system, TRACER, is also described. (YLB)

**ED205762 CE029770

The Role the Career Information System Plays in Assessment and Employability Development Plans.

Fauria, Charlene K.

Oregon Univ., Eugene. Career Information System.

Apr 1981 26p.

Available from: Career Information System, University of Oregon, 247 Hendricks Hall, Eugene, OR 97403 ($3.00).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

Because there is no "right" way to do assessment, vocational evaluation, or employability development planning, a variety of strategies and tools are used by agencies that best match agency resources and client needs. One common tool used by Lane County CETA, Jackson-Josephine Job Council, and Mid-Willamette Valley Consortium (all in Oregon) is the Career Information System (CIS). The agencies have found the Career Information System to be an invaluable resource for providing accurate occupational and educational information to career decision makers. CIS is used in seven main ways: (1) to provide career exploration by providing facts about jobs; (2) to increase knowledge about jobs and training so informed choices can be made; (3) to motivate the unemployed so they will become more interested in exploring training and placement opportunities; (4) to help discover courses of action and the way various alternatives might affect their future; (5) to assist in applying for and entering into training and employment--writing resumes, conducting interviews, etc.; (6) to assist in writing employability development plans; and (7) to assist in program planning. (KC)

ED156200 IR006433

ICS: An Intelligent Vocational Guidance Counseling System.

Lorton, Paul, Jr.; And Others

Jun 1977 9p.; Paper presented at the Conference on Computers in the Undergraduate Curricula (East Lansing, Michigan, June 20-22, 1977); For entire proceedings, see IR 006 142

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Computerized career guidance systems hold the promise of providing a breadth and depth of information for which counselors are not suited. At the Institute for Mathematical Studies in the Social Sciences, Stanford University, an individualized counseling system (ICS) is being developed which integrates advanced techniques from comptuer assisted instruction and computer science into an interactive computer system for vocational guidance counseling. The ICS system seeks to individualize and modularize the guidance process by providing (1) better computer models of individual students, (2) flexible data structures to permit ready and nearly automatic updating of data bases for guidance, and (3) increased transferability of programs. It is estimated that, even in the trial phase, ICS will be as cost effective as systems already in production use. (CMV)

**ED203910 JC810340

Exploration of Career Information Delivery Systems Via Computerization.

Moore, Rod; And Others

Southwest Virginia Community Coll., Richlands, Va.

1981 40p.; Sponsored by Improving Vocational Guidance and Counseling Project.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

Based on research conducted by Southwest Virginia Community College, this monograph presents information in a variety of formats on seven computerized career information systems: (1) microcomputers, which have the advantage of low cost, amenability to the production of locally generated databases, and portability; (2) the Coordinated Occupational Information Network (COIN); (3) the Computerized Vocational Information System (CVIS); (4) the DISCOVER II program for microcomputers; (5) the Computerized Educational and Career Information Link (CECIL); (6) the Guidance Information System (GIS); and (7) the System for Interactive Guidance and Information (SIGI). In addition to individual descriptions of each system, a chart is provided, which compares these systems with respect to what kinds of information are included; cost of the software and hardware; how the system groups occupations (e.g., by values, interest, Dictionary of Occupational Title numbers, or Holland Codes); the number of occupations listed in the system; and how often the system is updated. Two additional articles are also included: Vince Landau's description of how Kansas Wesleyan College uses a microcomputer in listing teacher vacancies, career planning, computer-assisted instruction, and providing career information; and Sue Captain's discussion of the advantages of housing a Career Information Center in the college library. (AYC)

ED156216 IR006449

DISCOVER: A Computerized Careers Curriculum.

Rayman, Jack R.

Jun 1977 10p.; Paper presented at the Conference on Computers in Undergraduate Curricula (East Lansing, Michigan, June 20-22, 1977); For entire proceedings, see IR 006 142

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Liberal arts campuses are feeling a need to provide better career education services for their undergraduate students. The DISCOVER Foundation has developed a comprehensive computerized career guidance system for grades 7 through 12 which not only provides career information, but also performs such tasks as teaching students decision-making skills and helping them to clarify their values. This system, which is being adapted for a college level computerized careers course, provides guidance through 12 50-minute modules of interactive content. Some tools and techniques developed by other guidance professionals, e.g., Holland's Self-Directed Search, have been incorporated in the System with permission, and provisions have been made to accommodate individual differences. Each of the DISCOVER system modules is described. (CMV)

ED178070 IR007813

Simulating American Social Structure: An Interactive Game-Simulation for Career and Life Cycle Decisions.

Shreiner, Scott C.

Apr 1979 23p.; Paper presented at the Annual Conference on Instructional Computing Applications of the Indiana University Computing Network (6th, Indiana University, South Bend, IN, April 24-25, 1979)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

CALIS is an interactive computer-based simulation developed to assess career decisions and to present decisional alternatives to the players in career and life path choices, assessing the relative consequences associated with these choices. The CALIS game-simulation places the player in the social-psychological situation of an individual confronting American society during the late adolescent through early middle age stages of the life cycle. This social-psychological situation is simulate-operationalized as a micro-economic decision making process where a player allocates his or her time and money to various aspects of the game. The mode of play permits the player to allocate these resources in any "life area," allowing the players to determine the importance of each area and the order of play. Beyond the resource allocation consideration, CALIS also collects player self-evaluations of the utility of their major decisions and the probability of success of attaining their game-oriented goals. The computer uses a graphic ratio-to-standard measure to make these utility and probability determinations. (Author)

Content Area Applications: Health Sciences

**ED194801 CE027212

Computer Technology in Nursing: A Comprehensive Bibliography. Nurse Planning Information Series No. 16.

Pocklington, Dorothy B.; Guttman, Linda
Health Resources Administration (DHEW/PHS), Bethesda, Md. Div. of Nursing.
Sep 1980 138p.
EDRS Price - MF01/PC06 Plus Postage.
Document Type: BIBLIOGRAPHY (131)

This comprehensive annotated bibliography contains 220 references on computer technology in nursing. Selected articles on electronic devices are included if they contribute to the historical perspectives of this area. The bibliography contains all articles that have appeared in nursing journals published in the United States, Canada, and England up to the date of this publication as determined by searches using Medical Literature Analysis and Retrieval System On-Line and National Health Planning Information Center retrieval systems and manual searches of Cumulative Index to Nursing Literature, Cumulative Index Medicus, International Nursing Index, and Current Index of Medical Literature. The articles, books, and studies/reports are listed in alphabetical order by author and numbered. All citations give author, source availability information, and abstract/annotation. References are also classified (by code) as to their relevance to clinical practice, nursing administration, nursing research, nursing education, or general. A classification matrix in the appendix groups references by numbers and whether they are considered a primary or secondary reference under their appropriate classification. The author index is arranged alphabetically with the reference numbers following the author's name. (YLB)

ED121279 IR003256

The Use of Computer Based Instruction in an Extended Degree Program for Nurses Leading to the Bachelor of Science Degree.

Estes, Carmen A.
Pennsylvania State Univ., University Park. Computer-Assisted Instruction Lab.
Apr 1976 16p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 19-23, 1976)
Sponsoring Agency: National Institutes of Health (DHEW), Bethesda, Md. Div. of Nursing.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150)

Some of the problems encountered in nursing arise out of the multiplicity of preservice educational programs and the predominance of registered nurses (R.N.s) who are prepared below the baccalaureate degree level. To facilitate the efforts of nurses already in practice to earn a bachelor's degree, the Extended Degree Program in Nursing (ENURS) of the Pennsylvania State University was developed. Through a mobile system, computer-based courses are now available to ENURS students in Pennsylvania. Called Computer Managed Review and Examination (CMRE), it has evolved from a set of traditional paper-and-pencil "challenge exams" to a comprehensive, computer-managed, self-study and assessment program for each of seven basic Penn State nursing courses for which a registered nurse may accrue credit by examination. (Author/JY)

ED179134 HE011919

Educational Applications of a Theory of Clinical Expertise.

Greenfield, Stephen; And Others
1979 48p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, 1979); some appendices will not reproduce well
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Two computer-based instructional projects and a workbook model designed to emphasize three different applications of expertise in medical problem-solving are described. The "CVTEST" Project (cardiovascular) explored the use of a computer program to provide guidance to students and facilitate self-assessment. The program does not directly teach, but provides support to students in the form of goals, content analyses, questions, and feedback discussions. The "Diagnostic Workbook" Project presents examples of expert problem-solving as illustrations of the process involved in the formation of a cognitive image of a case. Accompanying each case are the protocol generated during the simulation exercises by either an expert or novice subject, a critical annotation of the protocol, generated by the expert consultant, and exercises (along with correct answers). The decision support model was designed to provide decision support by giving information tailored to clinical tasks. Among principles listed for the formation of the system are that it would supplement meta-knowledge and that it extend domain knowledge. A sample of the "CVTEST" Project questions and workbook exercises and feedback are appended. (PHR)

ED161419 IR006259

Report of the Computer Assisted Instruction Project in the Faculty of Nursing at the University of Calgary.

Hannah, Kathryn

Mar 1978 8p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

Since August of 1976, the Faculty of Nursing at the University of Calgary has developed and implemented a four-phase computer assisted instruction (CAI) project. In Phase I, the pilot project to demonstrate effectiveness of CAI as an alternative teaching strategy in that setting has been completed and replication is on-going. In Phase II, identification of areas in the curriculum which could be effectively taught using CAI is currently being surveyed; and an inventory of nursing-related CAI programs in North America is to begin in January 1978. In Phase III, acquisition of computer terminals for the Faculty of Nursing's Learning Resource Center has been accomplished; acquisition of CAI lessons from external sources is awaiting the completion of Phase II; and the development of CAI lessons is in progress. Preliminary discussions have taken place about the delivery of CAI-based courses for credit to nurses in rural Alberta; this will be Phase IV of the project. (VT)

ED162622 IR006266

Medical Student Authoring of Medical Lessons on PLATO.

Nelson, Charles D.

Mar 1978 11p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

Computers are intrinsically fascinating to students once they learn what materials are available and become familiar with working on the terminals. The Plato Health Science Network contains an extensive catalog of lessons of interest to medical students and is available to anyone on request; this has resulted in several hundred hours per week of lesson usage. A by-product of this high usage is that students become interested in creating lessons by authoring scripts and programming the computer. Historically this student interest has been discouraged as irrelevant to the process of becoming a physician. However, because of student persistence, such participation has come to be accepted and even encouraged by the staff of the Medical Plato Project. Student participation in authoring has resulted in a substantial number of quality additions to the clinical offerings of PLATO. Specific examples of student work are described, including projects in progress or planned. In addition, contributions of student authors toward faculty involvement in CAI are noted. (Author/VT)

**ED208863 IR009775

Evaluation of Biomedical Computer-Assisted Instruction from a User/Institution Viewpoint. Final Report.

Rubin, Martin L.; And Others

Human Resources Research Organization, Alexandria, Va.

Sep 1976 113p.

Sponsoring Agency: National Library of Medicine (DHEW), Bethesda, Md.

EDRS Price - MF01/PC05 Plus Postage.

Document Type: RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160)

This study focuses on the experiences of eight biomedical institutions which have undertaken the development of computer assisted instruction (CAI) projects and answers specific questions about the utilization of CAI in these institutions. The study examines the CAI development projects from a number of perspectives including: (1) attributes of students who use or do not use CAI materials, (2) characteristics of faculty who participate in CAI development, (3) incentives utilized to stimulate faculty participation in CAI, (4) experience with transferring CAI systems to other educational environments, (5) effectiveness of various computer assisted instructional modes, and (6) impact of CAI on student achievement. Fourteen references are provided, as well as a list of contract personnel from the various biomedical institutions involved in the study, a sample survey form used to collect data, and a list of initializations and abbreviations used in the report. (Author/LLS)

ED148301 IR005250

A Computer-Based Dietary Counseling System.

Slack, Warner V.; And Others

Journal of the American Dietetic Association, v69 n4 p385-390 Oct 1976

Oct 1976 8p.; Not available in hard copy due to marginal legibility of original

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: JOURNAL ARTICLE (080)

The preliminary trial of a program in which principles of patient-computer dialogue have been applied to dietary counseling is described. The program was designed to obtain historical information from overweight patients and to provide instruction and guidance regarding dietary behavior. Beginning with a teaching sequence, 25 non-overweight participants responded to 375 questions (items) on the cathode-ray screen. Questions were divided into three sections: dietary history, analysis of food intake for a usual day, and diet and menu planner. As questions appeared on the screen, the participants read them aloud, explained their understanding to an assistant, and answered at the keyboard. This initial trial sought to study the process of dietary interviews by computer, the read-aloud procedure served to uncover defects in word choice, instructions, and interview strategies. Difficulties in understanding were evident in 12% of the items. Use of the keyboard evoked more difficulties than favorable reactions (7% vs. 4%) during the teaching sequence, whereas favorable responses to the keyboard were more frequent than difficulties (2% vs. 1%) during the dietary sections. While the computer interviews demand clarity and structure from the writer of the program, they do facilitate the writing and revision by compiling a complete and detailed record of the interview. Despite the difficulties of a limited choice of responses, ambiguities and hidden meanings in the questions, and matters of courtesy, cumulative refinements of the interview will lead, eventually, to a standardized counseling system of known performance. (DAG)

ED144573 IR005173

Computer Assisted Instruction in Air Force Medical Training: Preliminary Findings.

Steinkerchner, Raymond E.; Deignan, Gerard M.

Air Force Human Resources Lab., Lowry AFB, Colo. Technical Training Div.

May 1977 90p.

Sponsoring Agency: Air Force Human Resources Lab., Brooks AFB, Texas.

EDRS Price - MF01/PC04 Plus Postage.

Document Type: RESEARCH REPORT (143)

An experimental problem-oriented medical curriculum was developed and administered by means of PLATO IV computer terminals to students enrolled in a Physician Assistant course. This report provided information required to determine if subsequent in-depth study of the comparative effectiveness of computer-assisted instruction as opposed to alternative conventional modes of instruction was warranted. This information includes development procedures, implementation conditions, student reactions, lessons learned, and cost data analyzed by Air Force health care scientists. (Author/DAG)

ED160080 IR006239

DDS: The Dental Diagnostic Simulation System.

Tira, Daniel E.

Mar 1978 7p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

The Dental Diagnostic Simulation (DDS) System provides an alternative to simulation systems which represent diagnostic case studies of relatively limited scope. It may be used to generate simulated case studies in all of the dental specialty areas with case materials progressing through the gamut of the diagnostic process. The generation of a functional diagnostic case study by the DDS System requires relatively little effort on the part of either a case author or the CAI staff. Any case thus generated exhibits two major areas of emphasis: the gathering of information about the "patient" and his or her dental problem, and the student's submission of diagnoses pertinent to the case. (VT)

ED160078 IR006237

Computer-Assisted Instruction in Medicine: A German View.

Voss, Gunnar; And Others

Mar 1978 12p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

The following seven American programs of Computer Assisted Instruction in Medicine are among 20 implemented at the University of Bonn: OPHTHA and FUNDUS (programs of the tutorial mode), CARDI (presents information via three media on the clinical alterations of Mitral and Aortic Stenosis as well as Mitral and Aortal Incompetence), CARDIOPULMONARY RESUSCITATION (simulates patients with cardiac arrest and takes the students through the sequence of cardiopulmonary resuscitation techniques), ABDOMINAL PAIN and COMA (used over the Health Education Network), and CASE (Computer Aided Simulation of the clinical Encounter). These programs were evaluated by means of questionnaires or personal interviews. The results clearly indicate that students feel comfortable working with programs of the tutorial mode and that they regard them as being motivating and more efficient than traditional instruction. Furthermore there was a very favorable response to clinical simulation programs. (Author/VT)

Content Area Applications: Law

ED178009 HE011927

Teaching Law with Computers: A Collection of Essays.

Burris, Russell; And Others

Interuniversity Communications Council (EDUCOM), Princeton, N. J.

1979 150p.; EDUCOM Series in Computing and Telecommunications in Higher Education No. 2

Available from: EDUCOM, Interuniversity Communications Council, Inc., Post Office Box 364, Rosedale Road, Princeton, NJ 08590 ($15.00)

Document Not Available from EDRS.

Document Type: BOOK (010); COLLECTION (020); REVIEW LITERATURE (070)

The use of the computer in teaching law is examined in this collection of essays. Discussed are the development of law-related programmed workbooks, predecessors to computer aided instruction (CAI); research findings and their implications for the design of law-related CAI exercises; advantages and limitations of CAI programs in law; and attempts to measure the effectiveness of CAI as a method of law instruction. Essays include: "Why Use a Computer in Teaching and Learning Law?" (Robert Keeton); "How Can the Law Professor Best Use Computer-aided Exercises?" (Roger Park); "How Do Computer-aided Exercises in Law Work?" (Robert Keeton); "The Authoring Process and Instructional Design" (Russell Burris); "The EDUCOM Workshop: A Model" (Carolyn P. Landis); "Network Experience and Experiments" (Russell Burris); and "Computer-aided Instruction in Law: Theories, Techniques, and Trepidations" (Roger Park and Russell Burris). Included in several of the essays are statistics and tables reporting such findings as student reaction and response to CAI, law schools involved in preliminary use of CAI, and examples of CAI exercises. The benefits of CAI were reported to be that it gives each student individual attention in that there is constant communication and feedback between student and computer and it gives the professor the opportunity to view instant critique of the student's performance as reported by the computer. (LC)

Content Area Applications: Mathematics (General)

**ED204144 SE035249

Computers in the Secondary Mathematics Curriculum.

Copple, Christine

Jun 1981 34p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: REVIEW LITERATURE (070); BIBLIOGRAPHY (131)

The purpose of this document is to increase the educator's awareness of the present situation in computers in the school. Although the study was directed at computers in the secondary mathematics curriculum, of necessity much of the material dealt with broader aspects of the computer in all secondary curricula. The first section of this report consists of a glossary of commonly used computer-oriented terms. The bulk of the document is a series of annotations of some of the current literature on computers, the first portion focusing on facts, figures, poritions, and attitudes regarding computer use in the secondary curriculum. The second set of annotations deals with computer uses in the mathematics classroom, and is subdivided into the following areas of concentration: (1) the teaching of computer literacy; (2) the teaching of computer science; and (3) computer-assisted instruction. The final annotation section focuses on the special aspects of microcomputers. The document concludes with a summary, some general conclusions, and two specific recommendations regarding computer use at the secondary level. (MP)

ED163992 IR006787

Elementary Mathematics with PLATO.
Dugdale, Sharon; Kibbey, David
Illinois Univ., Urbana. Coordinated Science Lab.
Jul 1977 33p.; For related document, see IR 006 788
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: CLASSROOM MATERIAL (050)

Computer-based courseware for the intermediate grades developed by the PLATO Elementary Mathematics Project was tested for a three year period in the public schools of Champaign and Urbana, Illinois. This brief report describes the project in terms of the student session, curriculum, educational effectiveness, and data feedback to teachers. Descriptions of 19 lessons on a variety of topics include objectives and purpose, as well as a few selected screen displays for most of them. A sample of student work shows how ten students responded to similar problems, and sources from which the lessons were taken are cited. (CMV)

**ED208876 IR009790

Green Globs: A Microcomputer Application for Graphing of Equations.
Dugdale, Sharon
Illinois Univ., Urbana. Computer-Based Education Research Lab.
Aug 1981 22p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC01 Plus Postage. Language: English
Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141)

This paper outlines the development of an activity that uses the computer's unique capabilities to provide students with a meaningful and highly motivating experience with the graphing of equations. The basic design of the game calls for the computer to display a coordinate grid on which it graphs any equations that are typed in by the student. Thirteen "Green Globs," each about .7 units in diameter, are scattered about the grid. The goal of the game is to explode all of the green globs by hitting them with graphs specified by typing in equations. If a shot misses the expected targets, diagnostic feedback is provided to debug the ideas used. The game is scored using an algorithm which encourages cleverly planned shots and provides a wide range of achievable scores. The decision to exclude the possibility of trigonometry functions in favor of other options is discussed. A provision of the game allows students to view any of the ten top scoring games and see what shots and strategies the top players have used. Highlights of classroom use of Green Globs are provided, including descriptions of techniques used by some of the more advanced students. One reference is cited. (CHC)

**ED207651 JC810574

An APPLE a Day Will Keep the Text Away or Using Microcomputers in Elementary Algebra.
Evans, Bob
Cuyamaca Coll., El Cajon, Calif.
1981 10p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Three applications of microcomputers in elementary algebra are described. The paper first discusses a program developed to help students explore the basic algebraic concept of linearity. Text and illustrations show how students can use the computer to visualize the conceptual relationship of slope and intercept, until they can accurately predict a graph given an equation. Alternative options for students who have difficulty formulating questions or experimenting are mentioned. Next, the paper considers the value of computer-generated quizzes in mastery courses where students are retested until they meet a prescribed criterion. The paper explains that computer programs, made up of a control and response evaluation program and a library of subroutines, can generate an infinite number of similar quizzes. Finally, the use of computer-directed video tutorials is considered. After noting that the possibility of computer tutorials is affected by the time involved in developing dynamic and instructive displays, the paper argues for combining the image and sound capabilities of video with the response processing and control capabilities of the computer. Finally, the paper briefly explains how the student can use an APPLE computer in conjunction with a video cassette recorder. (AYC)

**ED215888 SE037082

Computer Storytelling Mathematics for Pueblo Indian Upper Elementary Level Students. Final Report.

Hakes, Judith A.

All Indian Pueblo Council, Albuquerque, N. Mex. Sep 1981 23p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

Details are provided of a project designed to develop an alternative, computer-based learning unit in mathematics and science for upper-elementary level Pueblo Indian students. A four-to six-week unit entitled "Pueblo Uses of Energy," which fused mathematical problem solving with science content related to the daily lives of Pueblo students, was produced. Fifth-grade students who participated in the field development attended Sky City Community School, a federal day school under the auspices of the Bureau of Indian Affairs. A microcomputer was used as the major mode of instruction to present material designed to introduce content and skills in a storytelling format, which capitalizes on one learning style of pueblo cupueblo culture. Sections in this document report on: (1) Background Information; (2) Objectives and Activities; (3) Time PERT Chart; (4) Description of the Unit; (5) Field Development Phase; (6) Results of the Field Development Phase; (7) Revision/Expansion Phase; and (8) Dissemination Activities. (MP)

**ED193032 SE032876

Using the Computer to Study and Assist the Learning of Mathematics. Occasional Publication Number 2.

Hartley, J. R.

Leeds Univ. (England).

1980 41p.; Contains occasional light and broken type.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

Computer Assisted Learning (CAL) is presented as a tool to assist with the teaching and learning of mathematics. Three types of learning are distinguished and the role of CAL within each of these areas is presented. The learning types described are the acquisition of concepts, the learning of relations and rules, and problem solving. Some CAL research and developmental studies in mathematics, along with applications, are reviewed. Sections also cover techniques of program and language design and how materials are used in order to achieve particular learning outcomes. This report concludes with some observations on the present requirements and future directions of CAL. (MP)

**ED215859 SE036395

Calculators, Computers, and Classrooms.

Higgins, Jon L.; Kirschner, Vicky

ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Columbus, Ohio.

Dec 1981 196p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

Available from: Information Reference Center (ERIC/IRC), The Ohio State Univ., 1200 Chambers Rd., 3rd Floor, Columbus, OH 43212 ($6.00).

EDRS Price - MF01/PC08 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); ERIC PRODUCT (071)

Suggestions for using four-function calculators, programmable calculators, and microcomputers are considered in this collection of 36 articles. The first section contains articles considering general implications for mathematics curricula implied by the freedom calculators offer students from routine computation, enabling them to focus on results and relationships, and is balanced by Section Two, exploring inappropriate ways calculators can be used. Freedom from thinking about routine calculations provides freedom for thinking about problem solving is the theme of Section Three. Articles in Section Four include some specific lesson ideas for using calculators in the classroom. Section Five focuses on programmable calculators. Section Six contains articles which consider ways in which microcomputers can be introduced into schools, addressing physical, economic, and political issues. Section Seven explores implications of the computer on mathematics curricula, considering both new topics and new approaches to old topics (such as computer assisted instruction). Computer literacy is the theme of Section Eight, suggesting that although all students need to know about computers, "what" they need to know is debatable. The ability to simulate real-world events (computer simulations) is considered in the final section, suggesting that this ability opens new areas for mathematical exploration. (Author/JN)

**ED211363 SE036039

1981 Ohio Regional Conferences on Mathematics Education: Microcomputers in Education.

Pikaart, Len; And Others

Ohio Univ., Athens. Coll. of Education.

1981 157p.; For 1980 Conference, see ED 200 421. Some journal articles deleted due to copyright restrictions. Contains occasional light and broken type.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC07 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); NON-CLASSROOM MATERIAL (055)

Six regional conferences designed to provide educational decision-makers and teacher-leaders with a state-of-the-art review of the possibilities, limitations, and recent technology of microcomputers in an educational perspective were held in 1981. The purposes of the conferences were to: (1) stimulate realistic and effective approaches to using microcomputers in middle, junior high, and secondary schools; (2) provide hands-on experiences and demonstrations of microcomputers; (3) indicate the range of software available; (4) provide summaries of microcomputer research and project results; (5) distribute criteria helpful for selecting both hardware and software; and (6) maintain cooperative linkages between local school personnel and other mathematics educators. The majority of this document consists of materials distributed to conference participants. These materials were either developed by the project staff or written by others and reprinted with permission. (MP)

ED156444 SE024352

PLATO and Fourth Grade Mathematics.

Stake, Bernadine Evans

Mar 1978 23p.; Paper presented at the annual meeting of the American Educational Research Association (Toronto, Canada, March 27-31, 1978); Not available in hard copy due to marginal legibility of original document

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: RESEARCH REPORT (143)

The purpose of the case study was to understand the effects of computer-based PLATO (Programmed Logic for Automatic Teaching Operations) mathematics curriculum on the classroom environment and the children in it. A cultural perspective was taken and anthropological techniques were used to investigate children's learning of mathematics in the context of a PLATO classroom. The data were obtained through observations and interviews over two years of one teacher and selected children, plus a teacher log and discussions with the curriculum developers. Results show that the children and the teacher benefited from the PLATO mathematics curriculum in achievement, typing, reading, and enthusiasm in mathematics. (MN)

Content Area Applications: Mathematics (Advanced)

ED146563 CS003774

Computer Assisted Problem Solving in an Introductory Statistics Course. Technical Report No. 56.

Anderson, Thomas H.; And Others

Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.

Aug 1977 26p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

The computer assisted problem solving system (CAPS) described in this booklet administered "homework" problem sets designed to develop students' computational, estimation, and procedural skills. These skills were related to important concepts in an introductory statistics course. CAPS generated unique data, judged student performance, provided hints about problem solving strategies, and stored relevant performance data. A PDP-10 computer, with hard copy and CRT terminals, was programmed to interact with students in an instructional mode. Courseware was coded in interactive Fortran and packaged so that additional items could be added easily to the existing problem set. After three semesters of implementation, student reaction to CAPS is generally favorable. (Author)

**ED210183 SE035931

Computer Supplements for Calculus I.

Hastings, Janet

Oct 1981 17p.; Paper presented at the Annual Meeting of the American Mathematical Association of Two Year Colleges (New Orleans, LA, October 10, 1981).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This report discusses how a computer was used to enhance the curriculum of a college calculus course. Problems with a calculus adjunct course in computer science are detailed, along with the nature of changes in the new program. The changes moved from student use of the computer as an automatic typewriter to use as a tool with instructional programs. Examples of ten assignments directed toward computer use are presented. The view expressed is that the results of the course changes exceeded expectations, with assignments so heavily intertwined with calculus topics that the students were gaining insights into mathematics through the activities. (MP)

**ED204361 TM810341

Interactive Study Lessons to Complement ANOVA.

Johnson, Craig W.; Plake, Barbara S.

1981 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (65th, Los Angeles, CA, April 13-17, 1981).

Sponsoring Agency: Nebraska Univ., Lincoln.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

This project developed and evaluated a series of interactive study modules for students taking a course in Analysis of Variance (ANOVA) techniques using the IBM Interactive Instructional System (IIS) software. Exercises were general enough to be applicable across a variety of research areas. The computer assisted instruction (CAI) approach was particularly appropriate for this type of material because of the hierarchical nature of the steps involved in ANOVA procedures. Graduate students enrolled in advanced statistical methods were required to complete each interactive lesson as they progressed through the course. Four classes over four years of implementation were evaluated by midterm and final unit exams for the course, course evaluation, and module evaluations. In terms of satisfaction and effectiveness, students ranked modules second only to the class lectures as a whole and far above the textbook and independent practice. There were significant increases in unit examination performance after module implementation. Initial responses of anxiety and apprehension concerning the computer environment yielded as students became familiar with the system. (Author/RL)

**ED201298 IR009171

Guidelines to the Use of Computers in Statistical Instruction.

Ling, Robert F.

1978 46p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: REVIEW LITERATURE (070); BIBLIOGRAPHY (131); TEST, QUESTIONNAIRE (160)

The introduction to this selective bibliography on the use of computers in teaching statistics provides a brief review of the role of the computer in statistics; the role of statistical packages; how statistical packages should be used in instruction; science, statistics, and data analysis; and choice and evaluation of statistical packages. Items listed in the bibliography are concerned both with instructional applications of computers and with the evaluation and comparison of statistical software. A copy of a questionnaire seeking information on available statistical software is appended, together with selected responses. These questionnaires were used to compile the data reported in the Index of Publicly Available Statistical Software, by Kohm, Ryan, and Velleman (1977). (LLS)

ED161935 TM007964

FEHR-Practicum: A Computer-Simulation Approach to Teaching Research and Evaluation Methods.

Shiffler, Nancy L.; And Others

Mar 1978 24p.; Paper presented at the Annual Meeting of the American Educational Research Association (62nd, Toronto, Ontario, Canada, March 27-31, 1978); For related documents, see ED 131 055 and 151 364-366

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

The Formative Evaluation and Heuristic Research (FEHR) Practicum, a computer-simulated educational research and evaluation experience, was assessed as a means of improving participants' knowledge and skill in traditional research. Trainee activities include the preparation of preliminary surveys, evaluation proposals, budgets, computer commands, and final reports. It was hypothesized that achievement in a two-semester graduate-level course in research design and data analysis would improve in direct relation to the amount of exposure to FEHR. During the first semester the effects of FEHR on final exam scores and on perceived research competence and interest in research were assessed; the Self Assessment of Research and Evaluation Skills was used to measure attitudes toward research. The second-semester evaluation examined the effects of differing amounts of exposure to FEHR on the development of applied research skills; that is, students' FEHR project reports were rated on a five-part criterion-referenced scale. Evaluation data from both semesters supported the hypothesis that increased FEHR exposure would produce a monotonic increase in achievement in basic statistics and research design and in the applied skills represented by the final report. The attitudinal measures provide less consistent support for the hypothesized monotonic trend. The FEHR-Practicum Rating Sheet (used in this study to rate proposals and final reports) is appended. (Author/CP)

**ED190111 IR008596

Teaching Statistical Concepts Using Microcomputer Simulations.

Stockburger, David W.

Apr 1980 32p.; Paper presented at the Southwestern Psychological Association Meeting (Oklahoma City, OK, April 1980). Best copy available.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This paper discusses the potential for the use of microcomputers as an aid in the teaching of statistics, and reviews five of the approaches that have been taken: (1) CAI question and answer dialogs; (2) statistics as a tool in the teaching of a computer language; (3) the computer as a computational tool; (4) computer generated tests and homework; and (5) the computer as simulator. The description of a microcomputer simulation program designed for an intermediate statistics course on research and design (ANOVA) includes an example of its application in a student exercise involving F-Ratios. Some guidelines on the purchase of a microcomputer system to be used in a statistics laboratory are provided. The paper concludes with a brief discussion of the obstacles to be overcome in the development of instructional systems, and the bibliography lists 24 references. (RAA)

ED141109 SE022590

Current Use of Computers in the Teaching of Statistics.

Tubb, Gary W.

Apr 1977 36p.; Paper presented at the Computer Science and Statistics annual symposium (10th, Gaithersbury, Maryland, April 14-15, 1977) ; Appendices may be marginally legible due to small print of the orignial document

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150)

This paper, prepared for a symposium on the interface of computer sciences and statistics, addresses the use of computers in the teaching of statistics. Two principle means of integrating the fields of computer science education with education in statistics are identified: (1) integrating the content of statistics in courses on computers, and (2) using computers as a method of statistics instruction. The first half of the paper provides a review of six textbooks in current use; three present statistical concepts and problems as examples of programming problems, while the remaining three are designed to teach statistics using computers as an aid in problem solving. The second half of the paper is devoted to a review of research and evaluation findings related to computer assisted instruction, simulations, and both interactional and non-interactional statistical packages. A bibliography containing 62 titles is included. (SD)

Content Area Applications: Music

EJ198328

Applications of Computers to Music Pedagogy, Analysis, and Research: A Selected Bibliography.

Peters, G. David; Eddins, John M.

Journal of Computer-Based Instruction; v5 n1-2 p41-44 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); REFERENCE MATERIALS--BIBLIOGRAPHIES (131)

Provides a literature review of computers and music education through articles and monographs, conference proceedings, project reports, dissertations, books, and research in progress. (RAO)

EJ198327

An Examination of Computer-Based Educational Hardware at Twenty-Eight NCCBMI Member Schools.

Arenson, Michael A.

Journal of Computer-Based Instruction; v5 n1-2 p38-40 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); REPORTS--RESEARCH (143)

Reviews a questionnaire sent to each of the 139 members of the National Consortium for Computer-Based Music Instruction to identify the systems, terminals, and peripheral equipment available to them, and discusses their future hardware needs. (RAO)

EJ198325

Random Access in Computer-Assisted Music Instruction.

Eddins, John M.

Journal of Computer-Based Instruction, v5 n1-2 p22-29 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Discusses the need for quick access to stored musical sounds for effective music learning, and describes random access audic hardware designed for use with the PLATO system. Examples are presented and five pedogogical principles derived are discussed. (Author/RAO)

EJ198326

Computerized Aural Training: An Interactive System Designed to Help Both Teachers and Students.

Lamb, M. R.; Bates, R. H. T.

Journal of Computer-Based Instruction, v5 n1-2 p30-37 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Describes the training in basic auditory recognition and retention skills throug the use of a computer-electronic organ interface, explains session structure and computerized aural test modules, and details the results. (RAO)

EJ198323

Proposal for a Notation to be Used in Encoding Musical Texts for Computer Programming.

Prevel, Martin

Journal of Computer-Based Instruction; v5 n1-2 p1-10 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); GUIDES--NON-CLASSROOM (055)

Discusses an alpha-numeric system of encoding musical notation--ALPHAMUSE--which is based on fundamental concepts of tonal statements. Encoding problems for pitch, duration, and superpositions are described and solutions offered. (RAO)

EJ198324

A National Survey on the Uses of, and Attitudes Toward Programed Instruction and Computers in Public School and College Music Education.

Taylor, Jack A.; Parrish, James W.

Journal of Computer-Based Instruction; v5 n1-2 p11-21 Aug-Nov 1978 (Special Issue)

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); REPORTS-RESEARCH (143)

Surveys the role of programed instruction and the computer in music education across the United States. Public school attitudes and employment practices, and the attitudes and advising practices of college music departments are discussed as they relate to this technology. (RAO)

**ED194057 IR008907

A Model for Generative Harmonic Dictation.

Bales, W. Kenton

1980 30p.; Paper presented at the Annual Meeting of the Association for the Development of Computer-Based Instructional Systems (Washington, DC, April 1-3, 1980).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: AUDIOVISUAL MATERIAL (100); CONFERENCE PAPER (150)

This BASIC computer program designed to help music theory students practice harmonic dictation generates examples for students to use in a drill and practice approach in developing aural skills. To facilitate the implementation of effective generative algorithms, the author has used a non-linear analytical technique similar to the chord symbol analysis that students in a music theory classroom might use. He believes this approach is superior to the linear or Schenkerian approach used in previous research because, in order for computers to generate progressions in a linear fashion, great amounts of temporary storage must be available, and complex parallel processing techniques must be implemented in the programming. The non-linear analytical technique avoids these problems. Documentation for the computer program is included. (Author/LLS)

Meet the Music Teacher's New Assistant--A Microcomputer.
Borry, L.
AEDS Monitor; v18 n5-6 p21 Oct-Dec 1979
The use of the microcomputer as a tool in the field of music education is described in this articles, which focuses on the use of the computer generated notation and sound in teaching composition and music fundamentals.

EJ225861
Integration of CAI into a Music Program.
Foltz, Roger; Gross, Dorothy
Journal of Computer-Based Instruction, v6 n3 p72-76 Feb 1980 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055)
Provides a format whereby the reader can become an effective director of a CAI music program in a relatively short period of time. Included are guidelines for planning, financing, and operating a CAI program within the context of a complete music curriculum. (Author)

EJ225864
The Effects of Computer-Assisted Aural Drill Time on Achievement in Musical Interval Identification.
Humphries, James A.
Journal of Computer-Based Instruction, v6 n3 p91-98 Feb 1980 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); RESEARCH REPORT (143)
Reports a study to determine the relationship between computer assisted aural drill time and achievement in musical interval identification, to determine the effect of computer assisted aural drill on attitude toward the study of aural music theory, and to determine the effect of previous keyboard experience on achievement. (RAO)

EJ225862
Development of a Concept-Centered Ear-Training CAI System.
Ottman, Robert W.; And Others
Journal of Computer-Based Instruction, v6 n3 p79-86 Feb 1980 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141)
Describes the development of a CAI ear-training system centered around a concept-oriented philosophy which focuses all application areas on a learning sequence based on tertian tonality. The hardware and software support of this system, site development and maintenance, student use, and curriculum development are reported. (RAO)

EJ225865
A Model for Integrating Computer-Assisted Instruction Materials into the Music Curriculum.
Placek, Robert W.
Journal of Computer-Based Instruction, v6 n3 p99-105 Feb 1980 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); RESEARCH REPORT (143)
Discusses the importance of the design structure of total programs in computer assisted music instruction and presents a model for integrating computer assisted instruction materials into the music curriculum. Listed are objectives and their relevant behaviors for use in a CAI course of study in music education. (Author)

EJ225863

Review of Audio Interfacing Literature for Computer-Assisted Music Instruction.

Watanabe, Nan

Journal of Computer-Based Instruction, v6 n3 p87-90 Feb 1980 (Special Issue)

Reprint: UMI

Document Type: JOURNAL ARTICLE (080); REVIEW LITERATURE (070)

Presents a review of the literature dealing with audio devices used in computer assisted music instruction and discusses the need for research and development of reliable, cost-effective, random access hardware. (Author)

ED161421 IR006261

PLATO Music Systems.

Gooch, Sherwin

Mar 1978 17p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

The original PLATO music concept was to replace the human performer in the feedback process, wherein the composer specifies an action and monitors the outcome, with a computer-controlled device. The first device of this type is known as the Gooch Synthetic Woodwind (GSW), which attempted to provide some of the features needed in an interactive, compositional facility, and many of those needed for computer-based music instruction. In the case of GSW, a PLATO-compatible music language was developed, as well as a compiler for this language, two music text editors, a filing system for music binaries, programs to play the music binaries in real time, and many debugging and compositional aids. A number of interactive compositional programs have also been written. With the advent of microprocessor technology, new PLATO terminals were developed to be less expensive and more flexible than the PLATO IV terminals. The 8080 microcomputer system in PLATO V terminals is capable of executing programs locally; it can also be connected directly to terminal peripheral devices. The goal of this system is to provide tools for music educators to use in the development of instructional materials, which might possibly include music dictation drills, automatically graded keyboard performances, envelope and timbre ear-training, interactive examples or labs in musical acoustics, and composition and theory exercises with immediate feedback. (VT)

ED171312 IR007337

The Development and Trial of a Computer Managed Test of Music Fundamentals.

Herrold, Rebecca

16 Nov 1977 21p.; Paper presented at the Oregon Council for Research in Teacher Education (Oregon, November 16, 1977); Appendix B, Table 2 may not reproduce well due to poor quality of the original type

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)

This paper presents the advantages of computer generated tests over traditional tests, outlines the procedures followed in developing a test of music fundamentals, and concludes with the results of a trial of the test. The test, which was developed and programmed in BASIC at Oregon State University, covers elements of notation, intervals and triads, song identification, meter identification, scales, solmization, major western composers, and their principal works. Subjects for the trial of the test were 95 students from freshman theory and basic musicianship courses and juniors in music education. (CMV)

ED161411 IR006248

Computer-Based Recognition of Perceptual Patterns in Harmonic Dictation Exercises.

Hofstetter, Fred T.

Mar 1978 11p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

During the 1975-76 academic year student response data were saved for a group of 17 freshman music majors as they worked through 15 units of harmonic dictation exercises delivered on the University of Delaware's Graded Units for Interactive Dictation Operation (GUIDO) system. Analysis of the student data base led to the identification of seven confusion tendencies that affect the perception of harmonies: bass line confusions, confusions by inversion, confusions by chord function, confusions by chord quality, unperceived sevenths, unperceived roots, and favorite response confusions. The level of student achievement on individual harmonies was found to be highly correlated with the percentage of times these harmonies are asked in the curriculum. (Author)

**ED196426 IR009034

The MEDICI Tutorial in Melodic Dictation. CMR Report X-2.
Newcomb, Steven R.; And Others
Florida State Univ., Tallahassee.
21 Oct 1980 19p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Melodic Dictation Computerized Instruction (MEDICI), a system of lessons which runs on the Florida PLATO real-time interactive graphic computer system, is part of the required curriculum for freshman music majors at the Florida State University School of Music, and provides private tutoring and practice for each student. The program begins by selecting a melody from the database and displaying the clef, key signature, time signature, and first note. The short four voice cadence which follows can be repeated as often as necessary until the student is ready to hear the entire melody. After each of the first two playings of entire melody, the student has 30 seconds to notate the melody on paper. After the third repetition, the student uses an interactive music editing system to enter his version of the melody. Two indexes are available for the student, one for editorial assistance and the other to help him determine which activity to go to next. The music data are formatted in a table of 48 60-bit words of computer memory. The format is described in detail in the appendices as are the two audio routines used. (BK)

ED160088 IR006247

Computer-Assisted Instruction Applications to Standardized Music Achievement Testing.
Peters, G. David
Mar 1978 10p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PAPER (150)

Recent developments in software and hardware capabilities have made possible the combination of the Music Achievement Test (MAT series and the PLATO music programs as a new delivery system. Initial reactions to the PLATO administration of digital to analog (D to A) testing in music have been positive; the immediate feedback available by computer, plus the individual pacing of the student are good reasons for this early success. The mode of test presentation remains a major question for extensive further study. If computer administered testing is standardized in the future, the chore of item analysis and test validation can be an easy matter, and it will be possible to have a continuous updating of norms. (VT)

**ED190116 IR008601

Courseware Development for Micro-Processor Based Instruction in Music.
Peters, G. David
1979 8p.; Paper presented at the Association for the Development of Computer-Based Instructional Systems Conference (San Diego, CA, February 27-March 1, 1979).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

This report on an investigation of available hardware which would support music peripherals in an instructional mode focuses on the application of microcomputers to the teaching of music. It discusses microprocessor-based PLATO instruction, hardware selection, and courseware transfer, and notes that experimental lesson results indicate that microcomputers have the demonstrated capacity to support high-quality computer-based education in music. References are provided. (FM)

EJ225860

Developments in Computer Based Music Instruction and Research at Indiana University.
Wittlich, Gary E.
Journal of Computer-Based Instruction, v6 n3 p62-71 Feb 1980 (Special Issue)
Reprint: UMI
Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141)

The three projects described are a pitch pattern perception study designed to lead to accurate and rapid perception of patterns of from 2 to 12 notes, exercises leading to an understanding of basic principles of voice learning in triadic tonal music, and a procedure for manipulating encoding pitch materials interactively. (Author)

Content Area Applications: Reading

ED173771 CS004920

Computer Applications in Reading.
Mason, George E.; Blanchard, Jay S.
International Reading Association, Newark, Del.
1979 115p.
EDRS Price - MF01/PC05 Plus Postage.
Document Type: BOOK (010); REVIEW LITERATURE (070)

Consituting the first full treatment of computers in reading, this volume focuses on recent developments in computer assisted instruction and its classroom implications. The eight chapters provide information on the following topics: the development of digital computers and of programs for using them for educational purposes, college centers developing computer based reading programs, public school applications of computers to reading instruction, computer assessment of readability and textbook analysis, sources of computer services, recommended uses of computers in the reading program, computers in reading research, and the future of the computer as an aid to reading instruction. Extensive annotated references are provided for each chapter. (FL)

**ED198793 IR009108

Teaching Elementary Reading by CMI and CAI.
Brebner, Ann; And Others
1980 23p.; For related documents, see ED 198 791-792.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A computer managed instructional system for reading, begun five years ago in Belvedere-Parkway Elementary School in Calgary, contains 329 behavioral objectives ranging from kindergarten to 8th grade levels, with testing performed online. After completion of a test, a student receives a printout listing the objectives completed, those that need revision, and those that remain to be learned. Class reports show student performance by objectives, and provide specific prescriptions for each student related to the reading texts used in the school. Results show that teachers, students, and parents have all benefited. Teachers are freed from administering, scoring, and recording tests, and can use the prescriptions to plan individualized instruction. Students are motivated by the positive statements about their progress which appear on their individualized summary sheets together with the objectives which still need work. Parents are pleased because they know, from the summary reports, where their children are in relation to what is expected. In addition, reading achievement scores for 6th grade students have increased from the 25th to the 55th percentile. Copies of the student summary sheet and the summary report are included. Additional details are provided in the attached paper by the same authors. (BK)

ED155676 CS004199

Using CAI to Teach Vocabulary Concepts.
Block, Karen K.; McCaslin, Ellen S.
May 1978 40p.; Paper presented at the Annual Meeting of the International Reading Association (23rd, Houston, Texas, May 1-5, 1978)
EDRS Price - MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150)

A project dealing with the development of computer-assisted instructional materials to teach new vocabulary words to college students is discussed in this paper. Seven different instructional modules for teaching new words are being developed at the University of Pittsburgh; they are entitled: define, word relations, classify, words in context, create, word line, and equivalents. The first three modules are discussed at some length in the paper and computer exercise routines are given. The remaining four modules are sketched briefly along with a summary of computer techniques. The research design, still in process at the time of writing, is described. The experimenters expect that there will be both specific and indirect methods effects in their program of vocabulary instruction. Several computer exercise routines are included. (JF)

ED155634 CS004152

Computer Assisted Instruction in Beginning Reading: The Stanford Projects.

Fletcher, J. D.

Pittsburgh Univ., Pa. Learning Research and Development Center.

May 1976 65p.; Paper presented at the Conference on Theory and Practice of Beginning Reading Instruction, Univ. of Pittsburgh, Learning Research and Development Center, May 1976; For related documents, see CS 004 132-133, CS 004 135, CS 004 137-173, ED 125 315 and ED 145 399; Not available in hard copy due to marginal legibility of original document.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

Document Type: CONFERENCE PAPER (150)

Two beginning reading curricula that use computer assisted instruction were developed during 12 years of work at Stanford University. This paper describes those curricula and the motivations, assumptions, procedures, and problems that were involved in their construction. Twelve observations about curricular design and development are summarized to help others interested in the developing field of cost-effective, individualized instruction. (Discussion following presentation of the paper is included.) (RL)

**ED214613 JC820170

Development of a Junior College CMI Computer-Managed Instruction Reading Instruction Program.

Havlicek, Larry L.; Coulter, Ted

23 Mar 1982 9p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

Haskell Indian Junior College's computer-managed instruction (CMI) reading program uses the computer to maintain records of student achievement, schedule student assignments and tests; provide students, teachers, and administrators with student progress reports; and compile, retrieve, and analyze data. Using classroom instruction and a mastery learning framework, the CMI program consists of comprehensive sets of three or four sequentially organized learning objectives, which pertain to published tests used in the reading program. Learners are informed of the objectives of each unit, which skills are being taught, and how they will achieve and demonstrate mastery. The first activity for each unit is preassessment to determine whether a student has the needed background and capabilities to complete a unit and to redirect students who lack this background or who have already mastered the unit's objectives. During the instructional cycle, several kinds of reports are computer-generated to identify instructional needs, select appropriate educational experiences, and chart learner progress. These reports include daily profile charts, and objective grouping, weekly, and yearly reports. The most important aspect of the program is a combination of preassessment, formative, and summative testing with directed learning. Test scores reveal that CMI students showed significantly greater gains in reading than students in regular reading classes. (KL)

**ED215302 CS006595

Development and Use of Microcomputer Reading Programs.

Henney, Maribeth

Mar 1982 7p.; Paper presented at the Annual Meeting of the Iowa Council of the International Reading Association (Des Moines, IA, March 11-13, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)

Of the currently available programs for microcomputers, only a few are applicable for reading instruction, and those being used are most frequently drill and practice. These programs focus on reading skills such as letter recognition, word alphabetization, and sight words. Very few programs are concerned with comprehension. Consequently, a team at Iowa State Universty in Ames, consisting of several elementary education faculty, a media specialist, and two programmers, produced five microcomputer programs, one of which focuses on the comprehension skill of paraphrasing. The program is designed for use on the Apple II Plus microcomputer and is in two parts: one using regular sentences and the other using sentences with idioms. In each part there are 15 sets of three sentences each. Basically each student is asked to read all three sentences and select the two giving the same thought. To integrate the paraphrasing program as part of a total instructional unit, the following sequences are suggested: (1) explain to students why the paraphrasing skill is important and how it may be used, (2) have students match pictures with sentences that give the same idea, (3) give sets of synonyms to be matched by students, (4) have students match short phrases with a single word, (5) have students compare direct and indirect quotes, (6) make use of the computer program, (7) have students summarize ideas in a few sentences, and (8) have students look up information on a topic and take notes. (HOD)

ED162277 CS004481

On-Line Diagnosis of Reading Difficulties-IV. Technical Report No. 464.

Johnson, Dale D.; And Others

Wisconsin Univ., Madison. Research and Development Center for Individualized Schooling.

Sep 1978 60p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143)

To evaluate the performance of elementary school children on various paradigms for assessing vocabulary knowledge on-line, three studies were conducted. In the first, 173 second through eighth grade students were involved in an investigation of five approaches to vocabulary assessment: synonym in context, synonym out of context, cloze, oral recognition, and self-screening. Results revealed significant problems with the self-screening and oral recognition formats; they were therefore eliminated from the succeeding studies. A total of 184 first through fifth graders participated in the second and third studies, which further evaluated the three remaining formats. These studies also correlated the children's performance on the three paradigms with scores on a standardized measure of reading comprehension. The results suggest that no single format is superior in assessing vocabulary knowledge across all grade levels. Data from the third study also indicate lower correlations between vocabulary knowledge and comprehension ability for the second and third grades than for the fourth and fifth grades. (Author/FL)

**ED216339 CS006690

The Effects of Utilization of PRI/RS on Reading Achievement in the Oklahoma City Public Schools. Evaluation of 1981-82.

Kimball, George H.

Oklahoma City Public Schools, OK. Dept. of Planning, Research, and Evaluation.

Journal of Research and Evaluation of the Oklahoma City Public Schools, v12 n1 May 1982

May 1982 59p.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143); SERIAL (022)

A study was conducted to determine (1) the extent to which the degree of use of PRI/RS (the Prescriptive Reading Inventory Reading Systems, a criterion referenced management system developed by CTB/McGraw Hill) affected comparable groups of students on standardized achievement measures; (2) whether the degree of use differentially influenced students' achievement based on their initial ability levels; and (3) the extent to which differential use of PRI/RS and TRACER, a computer management system, affected reading acquisition measures, such as number of objectives mastered and retention of skills mastered. Subjects were all students in grades two and five in a large city school district. Analysis of data showed that the use of PRI/RS had a systematic and reliable effect on student reading achievement. The students whose teachers used PRI/RS and TRACER consistently and to a high degree performed significantly better on standardized achievement tests. It also appeared that the effect was distributed across ability levels. At all ability levels, the high-use individuals demonstrated superior reading achievement test scores. (FL)

**ED202476 IR009350

Preschool Children Use Apple II To Test Reading Skills Programs.

Piestrup, Ann McCormick

Advanced Learning Technology, Portola Valley, Calif.

28 Jan 1981 13p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

Fifty-five preschool children, ages three and four, used an Apple II microcomputer to learn reading readiness concepts of "above," "below," "left," and "right." Available during indoor play periods for three weeks at a nursery school on the Stanford University campus, the microcomputer was accepted enthusiastically by children, teachers, and parents as an activity center, and criterion tests on the four reading skill concepts showed that children improved after the 3-week period with the microcomputer. Color graphics, music, and voice response to keyboard inputs by the children were elements used in the program, and children evidenced considerable enjoyment using the computer. While the Apple was monitored at all times by a research assistant, the children soon learned how to operate it properly and how to take care of both the microcomputer and the diskettes used to run the program. (Author/BK)

**ED217879 IR010265

New Technology in the Classroom: Computers and Communication and the Future.

Schuelke, David; King, D. Thomas

20 Mar 1982 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)

This paper summarizes and discusses recent research in computer assisted instruction, specifically in the subject areas of reading comprehension and skills, composition, and organizational communication and information utilization. A "grounded theory" approach based on educational needs is proposed for future research. There are 26 references and an appendix listing over 140 commercially available online databases. (RAA)

**ED185495 CS005195

Teachers Adapt to Innovation

Schulz, Dorothy Grant

Turner Unified School District 202, Kansas City, Kans.

30 Jun 1979 73p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); RESEARCH REPORT (143)

Three functions of educational change and innovation are to hypothesize a solution in a school problem solving process, to meet educational goals more efficiently, and to stimulate interest and progressive development in school personnel. The retrospective study of a five-year implementation of a reading improvement program concluded that this program change accomplished all three functions. The school district coupled a new basal reader program and a criterion referenced testing system with computer assisted instructional methods in an attempt to increase student reading achievement. When teachers were asked to report on their perceptions of the program implementation period, they showed that they adapted in different ways. Program implementation was accomplished through structuring skills (correlation guidelines), time (schedules), and routines (classroom and computer procedures). Some teachers developed new organizational arrangements and approaches; but other teachers continued to use old techniques while adding on the new components, creating the sensation that they were teaching two separate reading systems. Teachers found support in exchanging ideas and complaints with other teachers. Overall, many teachers felt that they had developed a new awareness of the components of reading instruction. (Appendixes provide questionnaires and the interview format used in the study.) (RL)

**ED198498 CS005899

Performance-Related Enabling Skills Training (PREST) Project. Final Report.

Stolte, Joanne B.; Smith, Shirley C.

Research for Better Schools, Inc., Philadelphia, Pa.

30 Sep 1980 177p.; Parts of the appendix may not be legible.

Sponsoring Agency: Department of the Navy, Washington, D.C.; National Inst. of Education (ED), Washington, D.C.

EDRS Price - MF01/PC08 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

This final report details the computer-based Performance-Related Enabling Skills Training (PREST) Project, designed to meet the United States Navy's need to develop an efficient and effective means of increasing the reading skills of Navy recruits with minimal loss of training time and minimal diversion of military personnel. The report is divided into several sections, with the first two describing the Navy's need for remedial reading instruction for its recruits and outlining the existing remedial reading program and its problems. The next two sections of the report give the step-by-step process of developing the PREST curriculum, and are followed by an evaluation and discussion of the project and recommendations for the future of the program. The major portion of the document consists of a series of appendixes that include recruit progress, study skills, and an attitude survey. (HTH)

**ED197307 CS005841

Computer Assisted Instruction: An Innovative Approach to the Development of Comprehension at the College Freshman Level.

Thompson, H. Wendell; And Others

Dec 1980 14p.; Paper presented at the Annual Meeting of the American Reading Conference (1st, Sarasota, FL, December 4-6, 1980).

EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Computer assisted instruction (CAI) modules were developed to improve the reading comprehension skills of college students at Alabama A and M University. These modules were designed and tested to provide individualized instruction in a remedial reading program that was already operating at full capacity. Based on an informal assessment, it appears that CAI can be used effectively to supplement classroom experience in reading. (One portion of a module on finding the main idea is offered as an example of how the CAI modules are designed and used.) (Author/RL)

**ED193608 CS005684
Simulating the Diagnostic Performance of Reading Clinicians.
Wagner, Christian C.
Apr 1980 31p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 7-11, 1980).
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A pilot study investigated the quality of diagnostic decisions that are made on the basis of a precise model of reading and learning to read. The study was carried out by creating a computer simulated reading clinician that embodied a recent model of the reading process and by observing the behavior of this simulated clinician as it diagnosed reading case records. Specific areas investigated were: (1) how well the simulation embodied the model, (2) how consistent and reliable the diagnostic decisions directed by the model were, and (3) how valid the diagnostic decisions directed by the model were. Findings indicated that the simulation was possible in as much as diagnostic test information provided answers similar to the items in the model, the simulation seemed to be reliable when comparing its diagnoses to those of reading clinicians, and the validity of the decisions was difficult to determine because case study information was inadequate. (MKM)

ED142990 CS003635
The Reading Machine.
Yeager, Robert F.
May 1977 32p.; Paper presented at the Annual Meeting of the International Reading Association (22nd, Miami Beach, Florida, May 2-6, 1977)
EDRS Price - MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150)

This paper describes lessons in beginning reading, developed by the PLATO Elementary Reading Curriculum Project (PERC), for use with first graders. The lessons were developed to reflect a number of specific principles, including: (1) all responses should be meaningful; (2) remedial feedback should be kept to a minimum; (3) students must always be forced to make the correct response; and (4) students should be able to pace their own instruction. Specific lessons from the PERC series are used to illustrate these principles and to demonstrate the unique uses of a computer for teaching reading. These uses turn the computer into a "reading machine," letting the first graders feel that they are in control of their computer terminal, rather than controlled by it. (AA)

Content Area Applications: Science

**ED190404 SE031497
A Meta-Analysis of Individualized Instruction in Science.
Aiello, Nancy C.; Wolfle, Lee M.
Apr 1980 22p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 7-11, 1980).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Reported are the results of a meta-analysis of 30 studies of individualized instruction in science in which this method was compared with a traditional lecture method of science instruction. Studies analyzed also included measurements from which effect sizes could be calculated. Five methods of individualized instruction were identified: (1) audio-tutorial instruction (AT), (2) computer-assisted instruction (CAI), (3) personalized system of instruction (PSI), (4) programmed instruction (PI), and (5) a combination category for studies containing characteristics of individualization but not easily identifiable as one of the previous four methods. On the basis of effect size, individualized instruction appeared to be more effective than the traditional lecture approach for all methods studied. Findings reported were termed preliminary indicating this study was not completed when reported. (PB)

**ED201486 SE034820

Developing Conservation Attitudes and Energy Concepts in Individuals of Various Cognitive Levels, Using the Energy Environment Simulator.

Cartwright, Dennis D.; Heikkinen, Michael W.

Mar 1981 27p.; Paper presented at the Annual Meeting of the Northwest Scientific Association (54th, Corvallis, OR, March 1981). Contains occasional light type.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Reported is a study of the effectiveness of the Energy Environment Simulator (EES) in developing energy awareness and positive attitudes towards energy issues in students at various levels of cognitive development. The EES is a portable computer model of U.S. energy resources, environmental quality and food distribution. Subjects were students from university educational psychology classes. Prior to treatment, level of cognitive development was measured by the Test of Logical Thinking (TOLT). The study involved a comparison of two treatments: (1) the EES (N=25); and (2) a lecture-slide presentation covering major ideas normally encountered in the EES program (N=20). Upon completion of the assigned treatments, students completed an Energy Awareness Attitude Assessment (EAAA), an instrument consisting of 20 questions dealing with knowledge of energy concepts and 16 questions measuring attitudes towards energy issues. Analysis of variance revealed that in general the EES was significantly more effective in teaching energy concepts than was the lecture-slide presentation. Individuals at higher developmental levels scored significantly better on the concepts test than did students at lower levels. No significant differences in attitudes were found. Included in the appendix is the EAAA instrument. (Author/WB)

**ED204104# SE034903

Chemistry with a Computer.

Cauchon, Paul

Programs for Learning, Inc., New Milford, Conn.

1980 184p.

Available from: Programs for Learning, Inc., New Milford, CT 06776 (no price quoted). Document Not Available from EDRS.

Document Type: BOOK (010); GENERAL REFERENCE (130)

This book, intended to serve as a resource guide for teachers wishing to implement computer-based learning in their own classrooms, is a collection of 29 classroom tested instructional programs designed to supplement an introductory chemistry course, regardless of text or approach. The programs cover a wide range of topics, from metric units of measure to solubility product calculations. To facilitate the use of the program, a description, sample run with student inputs underlined, and program listing have been included for each program. Programs are categorized as tutorial, simulation, problem generation, or demonstration. Program listings are all given in a version of BASIC used commonly in academic institutions. An appendix offers suggestions for modifications if help is needed with the translation of commands from BASIC to another system. (CS)

**ED186234 SE030537

Vibrations and Waves: Using Computer Assisted Learning.

Cox, M. J.; Lewis, D.

Aug 1979 15p.; Paper presented at the GIREP Conference on Oscillations and Waves and Current Problems in Physics Education (Rehovot, Israel, August 19-26, 1979). Contains light and broken type. For related document, see ED 186 235.SE 030 538.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Described is the development of computer assisted learning packages for nonscience major undergraduate students. The equipment needed to run the packages is described as well as the role and value of the packages. Several examples of the kind of computer graphics used in the computing laboratory are illustrated. The problems associated with the packages are evaluated, and an assessment of students' work is given. (SA)

ED139644 SE022457

Computer Assisted Instruction and Computer Test Construction in Chemistry at Middle Georgia College.

DeLorenzo, Ronald A.

1976 8p.; Paper presented at the 1977 Two-Year College Chemistry Conference, New Orleans, Louisiana.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Details of a computer-assisted instruction program in chemistry are given. Approximately half of the instructional computer usage is centered around drill, tutorial, and simulation programs. Problem solving, including research, and programming courses constitute the other half. Also described is a computerized system available to the chemistry faculty that generates examinations from an item pool, grades the examinations, and prepares a statistical analysis of the examination questions, answers, and scores. (MH)

**ED216877 SE037701

Minicomputers in the Teaching Laboratory - An Example from Physics.

Farr, John E.; van den Berg, Willem H.

1982 7p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

Microcomputers are commonly interfaced to external devices in scientific, industrial, and consumer settings for data acquisition and for control. The general problem under consideration is the task of taking measurements of some continuous phenomenon, transforming them into digital form, and storing the data in the microcomputer for later use. First, the physical variable to be measured must be changed to a voltage (or resistance) by means of some transducing device; for example, light intensity can be transduced to a voltage using a photocell. Then, too-large or too-small voltages need to be amplified. Next, the continuous voltage is converted to a digital representation in eight bits. Finally, the analog-digital converter is connected to the data address, and control buses of the microcomputer. Microcomputers such as Apple, TRS-80, Atari, Compucolor, and others, have a "game paddle" which is used to accomplish all of these steps while another method involves using a thermocouple. Once the system is ready, such experiments as those involving pendulums can be easily accomplished, a typical program recording the position of a swinging pendulum, displayed the motion on the monitor, and displaying graphs of variables examined during the experiment. Most students prefer using the computer as it swiftly and accurately performs the experiment's busywork. (Author/JN)

ED183195 IR008137

Computer Applications in Science Education. The Illinois Series on Educational Application of Computers, No. 17e.

Gaede, Owen F.; Singletary, Ted J.

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 85p.; For related documents, see IR 008 123-139.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

This paper provides a summary of information and ideas relevant to the use of computers in science education, describes a variety of uses and strategies, discusses advantages and disadvantages of specific applications, and explores the decision-making process surrounding computer instruction implementation. Uses and strategies which are described include laboratory assistance, simulations, tutorial lessons, drill and practice, and testing. Each of these areas ends with a list of suggested study activities. No attempt is made to teach programming, for this paper presupposes that the reader possesses some skill in either BASIC or FORTRAN, or a language of a similar structure. Appendices contain a listing of a test statistics program and a test item analysis program, and a brief bibliography is attached. (Author/CMV)

ED138451 SE022338

Community College Biology Lesson Catalogue.

Herrick, Kathie G.

Illinois Univ., Urbana. Computer-Based Education Lab.

Aug 1976 99p.; For related document, see ED 128 172; Not available in hard copy due to marginal legibility of Lesson Samples

Sponsoring Agency: National Science Foundation, Washington, D.C.

Available from: PLATO Publications, Computer-Based Education Research Lab, 252 Engineering Research Lab, University of Illinois, Urbana, IL 61801 (no price quoted)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CLASSROOM MATERIAL (050)

This catalog contains descriptions of the available biology lessons on PLATO IV, compiled to assist instructors in planning their curricula. Information is provided for 87 lessons in the following areas: experimental tools and techniques; chemical basis of life; cellular structure and function; bioenergetics - enzymes and cellular metabolism; reproduction and development; classical genetics and the nature of the gene and its action; evolution; population biology and ecology; plant anatomy, physiology, and pathology; taxonomy; human anatomy and physiology; animal behavior; and biology games. For each lesson, the following are provided: file name, authors, instructional objectives, description, student time, instructional strategy, special notes, and displays. All lessons are appropriate for use in the first semesters of college-level biology; most were written for non-major survey courses. The Appendix contains the Community College Biology Index and Multiple-Choice Quiz Construction. (CS)

**ED200284 JC810205

Micro-Computer Tutorial Assistance Project.

Kamm, Steven D.

South Oklahoma City Junior Coll., Okla.

1981 29p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)

This evaluative report summarizes the objectives, costs, and outcomes of a project undertaken by South Oklahoma City Junior College to develop 50 computer-based tutorial lessons to assist students in mastering the requirements of a competency-based physics course. A rationale for the project is presented first, based on the inordinate amount of time required of the instructor to individually tutor students; the unsatisfactory nature of commercially prepared workbooks; and the positive results of an initial pilot study. The report then outlines specific project goals: to reduce the dropout rate and the number of attempts students needed to demonstrate competency for each course objective; to improve student attitudes toward physics; and to leave the instructor with more time to help the students with the most serious difficulties. The report then describes the special features of the tutorial lessons, which are programmed on micro-computer cassettes and which require the student to establish problem-solving methodologies with gradually decreasing amounts of assistance. Implementation problems posed by time constraints and limited memory capacity are examined prior to an evaluation of the system based on a comparison of student progress using the system with the progress registered by students prior to its implementation and student evaluations of the system. The report concludes with a summary of project funding and expenses. (JP)

**ED218096 SE037896

Education in the 80's: Science.

Rowe, Mary Budd, Ed.

National Education Association, Washington, D.C.

1982 170p.

Available from: National Education Association, 1201 Sixteenth St., N.W., Washington, DC 20036.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055); GENERAL REPORT (140); COLLECTION (020)

Designed to serve as a resource for science teachers, kindergarten through college, this publication contains 10 chapters, each focused on a topic of interest to science teachers working in the 1980's. Chapter titles and their authors are: (1) Understanding Science as a Cultural Phenomenon - Mission for the 80's, Drew Christianson; (2) What Research Says about Student-Student Interaction in Science Classrooms, Roger T. Johnson and David W. Johnson; (3) Linking Teacher Behaviors and Student Behaviors in Science, James R. Okey and David P. Butts; (4) Learning Science in Informal Settings Outside the Classroom, John J. Koran, Jr., and Lynn D. Shafer; (5) The Effects of Activity-Based Science in Elementary Schools, Ted Bredderman; (6) Attitudes and Science Education, Carl F. Berger; (7) The Role of Laboratory Work in Science Courses: Implications for College and High School Levels, Elizabeth H. Hegarty; (8) Problems in Understanding Physics (Kinematics) Among Beginning College Students - With Implications for High School Courses, Lillian C. McDermott; (9) Conceptual Development Research in the Natural Setting of a Secondary School Science Classroom, James Minstrell; and (10) The Computer and the Teacher, Joseph I. Lipson and Laurette F. Lipson. A brief biographical sketch of each of the contributors is also included. (PEB)

ED176806 IR007828

Computers in Chemistry Teaching: A Bibliography and Index of CAL Packages.

Rushby, N. J.

London Univ. (England). Imperial Coll. Computer Centre.

Jul 1979 33p.; For a related document, see IR 007 784

EDRS Price - MF01/PC02 Plus Postage.

Document Type: BIBLIOGRAPHY (131); DIRECTORY (132)

This resource document lists 36 books, papers, and reports dealing with various uses of computers in chemistry instruction; and describes several computer program packages available for use in teaching undergraduate, experimental laboratory, physical, and nuclear and X-ray chemistry, including biochemistry. Each program package is presented by reference number, name, description, subject, comment, language, and contact source for obtaining the package. (CMV)

ED125617 IR003704

Computer Usage in the College-Credit High School Biology Curriculum.

Slaby, Robert

4 May 1976 12p.; Paper presented at the Association for Educational Data Systems Annual Conference (Phoenix, Arizona, May 4, 1976)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Students of advanced life science courses at Beverly Hills High School, California, are able to approximate a wide variety of life process experiments through use of computer simulations. Students are taught to use the BASIC language and to execute programs on the Hewlett-Packard 2000 Access series. Computer programs are used to enhance instruction by providing: (1) unit reviews; (2) self-tests; (3) analyses of laboratory data; and (4) simulations of life processes. One program, SPHOTO, enables students to observe and quantitatively analyze the process of photosynthesis. A sample SPHOTO dialog is provided. (EMH)

Content Area Applications: Social Studies

**ED209165 SO013725

Computers in the Social Studies Classroom. How to Do It Series, Series 2, No. 14.

Diem, Richard A.

National Council for the Social Studies, Washington, D.C. 1981 8p.

Available from: National Council for the Social Studies, 3615 Wisconsin Avenue, N.W., Washington, DC 20016 ($1.50, quantity discounts available).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: TEACHING GUIDE (052)

Designed to introduce social studies teachers to computers and to suggest ideas for their potential applications in social studies classrooms, this booklet is arranged in various sections. One section describes the origins of the modern computer, another defines computer terminology, and two sections explain computer hardware and computer software. Another section discusses three major ways in which computers are being used in schools. The first is computer assisted educational management systems which are designed to provide the evaluation of entering students, prescription formulating, individualization of instruction, record keeping, curriculum development, and evaluation. Second, computer assisted instruction (CAI) is being widely used. Drill and practice, tutorial help, simulations, inquiry modes (these allow students to ask questions within the context of the lesson), problem solving, and computerized games are common varieties of CAI. And third, computers are being used in what is called computer assisted learning. Students use the computer as an aid in solving problems, reviewing, and evaluating their progress. The booklet discusses training teachers to use a computer. Instructional software for teachers is cited. A sample lesson, "Election Projections," for using computers in the social studies classroom is provided. The booklet ends with a discussion of what the future holds. The results of a national survey to assess the use of computers in public elementary and secondary schools are also provided. A bibliography is included. (Author/RM)

ED164424 SO011435

Using the Computer in the Social Studies Classroom.

Hantula, James

Nov 1978 13p.; Paper presented at Annual Meeting of the National Council for the Social Studies (Houston, Texas, November 22-25, 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Social studies instruction will improve if social studies educators cooperate with computer professionals to develop ways of using the computer in the classroom. Objections of many social studies teachers to computers are based on experiences in which computers were used to intimidate consumers, implement poorly conceived projects, and promote rigid instructional approaches. If social studies teachers and computer professionals work together to provide a balanced program in processing information, they can extend skills of data collection, storage, retrieval, and analysis. Examples of computer projects of special interest to social studies teachers include the PLATO system, which is especially useful for studying population geography, and computer based resource units. Specific advantages of using computer instruction in the classroom include individualization of instruction, broadening of teachers' bases of information by allowing them to search various computer bases such as Educational Resources Information Center (ERIC), diagnosis of student needs, assignment of instructional sequences, evaluation of programs, locating information, data processing, and enhancing educational games and simulations. (DB)

ED129652 SO009404

Computer-Assisted Instruction in Political Science. Instructional Resource Monograph No. 4.

Pool, Jonathan, Ed.

American Political Science Association, Washington, D.C.

1976 138p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

Available from: Publications, American Political Science Association, 1527 New Hampshire Avenue NW, Washington, D.C. 20036 ($4.00 paperback)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: BOOK (010)

This six-author study highlights the most significant attributes of Computer Assisted Instruction (CAI) and explains the techniques of authoring CAI lessons in political science. Fourth in a series of Instructional Resource Monographs, the volume has the objective to inform political science teachers and students about what CAI has to offer on a range of topics, including political philosophy and political behavior. The volume is divided into two sections. Section I concerns theory and deals with the capabilities and problems of CAI in general. It is divided into three chapters: "The Computer as an Aid to Effective Teaching;" "CAI: What's in It for Me?;" and "Authoring Made Easier: How CAI Packages Work." Section II deals with CAI practice and presents three experimental examples of CAI in political science. It includes these chapters: "Playing Politics: Reflections on an Experiment in Computer-Based Education;" "Computer-Assisted Instruction in Political Philosophy;" and "Teaching Principles and Methods with CAI." A guide to selected continuing sources of information on CAI is included. (Author/DB)

ED143588 SO010263

Computer in the (History) Classroom.

Schafer, Robert G.

AHA Newsletter, v15 n7 Oct 1977

Dec 1976 15p.; Paper presented at Annual Meeting of the American Historical Association (Washington, D.C., December 28-30, 1976)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

The paper discusses how computer assisted instruction can increase student interest and participation in history courses on the college level. An instructor might make use of a computer as an ancillary data bank system, a device for examining student understanding of course material, and a means of creating simulation and other educational games. Several computer exercises are described and student reactions to these games are discussed. Student interest in and learning from computer games is generally high, although some negative feedback from students preferring a more traditional course is noted. General guidelines to teachers composing computer exercises are presented. The author advises that the games be short, simple, specific, interesting, non-ambiguous, that they emphasize important points in the exercise, and that they involve the player continuously through frequent demand for decisions. The conclusion is that use of computers in the classroom is one way of maintaining the vitality of the study of history and reversing the trend of declining enrollment in history courses due to student disinterest. (Author/DB)

ED137162 SO009873

Simulated Research Experiences for Teaching Research Methodology: Some Educational Computing Implications.

Wieting, Stephen G.

1976 29p.; Paper presented at Annual Meeting of the American Sociological Association (New York, New York, August 30-September 3, 1976)

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150)

The ambiguities surrounding computer simulations in sociology teaching and research on the university level are described and the implications of computers as a teaching technique are explored. Intended as an explanation to sociology teachers and researchers of how students' learning experiences are shaped by their orientations to computer environments, departmental organization, and university organization, the paper is presented in three sections. Section I discusses the relationship between using the computer for educational purposes and sociological theory. Simulation examples and observations on educational environments are given. Section II presents reasons why computer usage is a particularly suitable topic for educational research. Reasons include the compatability of computer technology with both teaching and research and evidence that students improve decision-making skills when trained in computer simulations. There are also indications that participation in computer simulations contributes to development of basic sociological knowledge which, in turn, facilitates learning of sociological theory. Section III discusses computer usage by the reformist element in sociology within the framework of statements by sociologist Wilbert Moore. Tables, a questionnaire of student attitudes toward research methodology, and references dealing with sociology education, simulations, student evaluations, and computerized education are included. (Author/DB)

Content Area Applications: Study Skills

**ED188599 IR008453

A Comparison of CAI and Class Instruction Approaches on Study Skills.

Gadzella, Bernadette M.

Feb 1980 16p.; Paper presented at the Annual Meeting of the Southwest Educational Research Association (3rd, San Antonio, TX, February 1980).

EDRS Price -MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A study was conducted to compare the effects of study skills instructions on students' study behaviors and attitudes when such instructions were offered through study guides, class instructions, and discussions, or via computer assisted instruction (CAI). Undergraduate students were separated into three groups which (1) read study skills guides and received instructions on these skills during regular classes; (2) received instructions on study skills through CAI; and (3) served as a control. All subjects responded to the Survey of Study Habits and Attitudes (SSHA) three times during the semester. Trend analyses on the seven SSHA measures showed no differences among the trials and interactions, and scores on the trials increased over the semester. Reverse patterns of perceptions on study habits were found for CAI and control groups. Scores for the CAI group showed upward shifts and scores for the control group showed downward shifts. Scores for the class instruction group, when compared with the CAI and control groups, did not change over the semester. It was concluded that the CAI was a superior method of providing study skills instruction when compared to the class instruction approach. (Author/CMV)

Developmental Efforts: PLATO

**ED194104 IR008982

Leren Met de Computer. Eindrapport van het PLATO-Proefproject. (Learning with a Computer. Final Report of the PLATO Pilot Project).

Camstra, B.; And Others

Amsterdam Univ. (Netherlands).

Aug 1979 215p.

EDRS Price - MF01/PC09 Plus Postage.

Language: Dutch; English

Document Type: EVALUATIVE REPORT (142)

A pilot project to assess the potential usefulness of the computer assisted instruction system PLATO to the instructional program at the University of Amsterdam is described. A 1500-word English language summary of the project is attached to this final report which is written in Dutch. Approximately 400 students and faculty members participated in the project between October 20, 1977 and July 1, 1979. The project itself focused on two main areas--a qualitative evaluation of the use of PLATO in various departments throughout the University, e.g., in French, physics, and musicology courses, and an investigation of the quality and availability of PLATO system courseware. It is concluded that, while PLATO is an excellent system for computer assisted instruction and such a system can be both highly effective and efficient for unit-oriented learning tasks, the applicability of courseware that is developed elsewhere would be limited in Dutch universities. (Author/LLS)

**ED202473 IR009347

Fifth Summative Report of the Delaware PLATO Project.

Hofstetter, Fred T.

Delaware Univ., Newark.

1 Jul 1980 159p.; Figures may not reproduce. For related documents, see ED 168 577 and ED 202 472.

EDRS Price -MF01/PC07 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

A brief history of the Delaware PLATO project and descriptions of the new developments in facilities, applications, user services, research, evaluation, and courseware produced since the Fourth Summative Report (1979) are provided, as well as an overview of PLATO applications at the University of Delaware. Sample lessons, illustrations, and activity summaries are presented for the 29 departments using PLATO, and new sites of development in political science and in the University of Delaware English Language Institute are described, as well as the continuing development of programs in biology and anthropology. The expansion of the PLATO project is indicated in terms of PLATO usage by departments; the number of terminals, both on campus and for outside users; the growth and reorganization of the staff; and the development of "utility" programs, including instruction in using PLATO and a format for constructing a questionnaire. Brief abstracts summarize faculty research in the areas of student achievement, perceptual research, and alternative learning strategies, and a catalog of programs currently under development in the project is appended. (BK)

**ED211070 IR009890

PLATO Highlights. Seventh Edition.

Lyman, Elisabeth R.

Illinois Univ., Urbana. Computer-Based Education Research Lab.

Oct 1981 76p.; For a related document, see ED 202 45.

Available from: Computer-Based Education Research Laboratory, University of Illinois, Urbana, IL 61801 ($3.00).

EDRS Price -MF01/PC04 Plus Postage.

Document Type: HISTORICAL MATERIAL (060); BIBLIOGRAPHY (131)

Important events and information about the PLATO system featured in this document include a short history of the development of the PLATO system, a list of the PLATO project's financial supporters, a chronological rundown of highlights in PLATO's history, and an extensive bibliography of resources about PLATO published between 1961 and 1981. A map of PLATO system sites is also included, as well as graphs showing PLATO usage. (LLS)

ED201321 IR009293

CERL PLATO Lesson Catalog: Curricular and Utility Programs.

Lyman, Elisabeth R.; Postlewait, Deborah S.

Illinois Univ., Urbana. Computer-Based Education Research Lab.

Apr 1980 850p.

Available from: University of Illinois, Computer-Based Education Research Laboratory, Urbana, IL 61801 ($17.50).

EDRS Price - MF05/PC34 Plus Postage.

Document Type: DIRECTORY (132)

This comprehensive catalog of available instructional materials for use with the PLATO system lists completed lessons which have been used in actual instructional situations or have had adequate testing to ensure that the files are in working order. Printed directly from the CERL online catalog, "uicat," the information provided for each citation includes the subject, a subheading, title with its PLATO code, year of first copyright and publication date, author, location of the author at the time the lesson was produced, an abstract, auxiliary equipment required, lesson completion time, and intended audience. Library of Congress subject headings have been used to catalog the lessons whenever possible, and extensive cross references are provided. The materials listed range in level of difficulty from the primary level through higher education, and embrace a wide variety of disciplines; e.g., reading; basic mathematics; languages, including English composition and English as a second language; business and accounting; botany, chemistry, and physics; algebra; statistics; engineering education; psychology; sociology; music; military science; teacher training; and medical education, including simulations for physicians, nursing and pharmacology courses, and courses for physician's assistants. Programs introducing the PLATO system and authoring PLATO courseware are also provided among a number of "utility" and computer science courses. (CHC)

ED146235 TM006747

Evaluation of the PLATO IV Computer-based Education System in the Community College. Final Report.

Murphy, Richard T.; Appel, Lola Rhea

Educational Testing Service, Princeton, N.J.

Jun 1977 446p.; Parts of the appendix are marginally legible due to print quality; For related document, see ED 122 900

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC18 Plus Postage.

Document Type: RESEARCH REPORT (143)

PLATO IV (Programmed Logic for Automatic Teaching Operations) is the fourth generation of a computer assisted instructional system developed at the University of Illinois. The use of PLATO IV at five community colleges, and an evaluation of its educational impact on participating students, instructors, and colleges are described. The PLATO system was found to be operating essentially as planned by its developers. The system provided a medium for instruction with substantial appeal to both students and instructors, but it had no consistent positive nor negative effects on student achievement nor attrition. The cooperative effort between instructors and developers was successful in that a substantial number of PLATO lessons were designed, developed, and integrated into ongoing community college courses in the five targeted subject areas: accounting, biology, chemistry, English, and mathematics. The usage of PLATO by students and instructors exceeded initial expectations although the extent of usage in classes was somewhat less on the average than had been projected originally. According to the evaluators, the critical factor which accounted for the high acceptance and usage of PLATO was the control that instructors had over its use. The attitude surveys and tabulated results are appended. (Author/GDC)

**ED211069 IR009889

CERL PLATO Lesson Catalog. Curricular and Utility Programs. Supplement Number 1.

Postlewait, Deborah S.

Illinois Univ., Urbana. Computer-Based Education Research Lab.

Nov 1981 228p.; For a related document, see ED 201 321.

Available from: Computer-Based Education Research Laboratory, University of Illinois, Urbana, IL 61801 ($5.00).

EDRS Price -MF01/PC10 Plus Postage.

Document Type: DIRECTORY (132)

This supplement updates the original catalog of available PLATO system instructional materials which was published in April 1980. The lessons described have been used in actual instructional situations, or have had adequate testing to guarantee that the files are in working order. Printed directly from the CERL online catalog, "unicat," the information provided for each citation includes the subject, a subheading, a title with its PLATO code, year of first copyright and publication date, author, location of the author at the time the lesson was produced, an abstract, auxiliary equipment required, lesson completion time, and intended audience. Library of Congress subject headings have been used to catalog the lessons whenever possible, and extensive cross references are provided. The materials listed range in level of difficulty from the primary level through higher education, and embrace a wide variety of disciplines; e.g., reading; basic mathematics; languages,including English composition and English as a second language; business and accounting; botany, chemistry, and physics; algebra; statistics; engineering education; teacher training; and medical education, including simulations for physicians, nursing, and pharmacology courses. (LLS)

ED158767 IR006398

Demonstration of the PLATO IV Computer-Based Education System. Final Report. January 1, 1972-June 30, 1976.

Slattow, G., Ed.

Illinois Univ., Urbana. Computer-Based Education Lab.

Mar 1977 412p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

Available from: Computer-Based Education Research Laboratory, University Illinois, Urbana, Illinois ($7.70)

EDRS Price - MF01/PC17 Plus Postage.

Document Type: RESEARCH REPORT (143)

This report for the period January 1, 1972 to June 30, 1976 describes a program conducted to reach the following major objectives: (1) to develop, test, and operate a large geographically dispersed PLATO IV network; (2) to implement an educational program involving educational liaison, teacher/author training, curriculum planning, and materials development; (3) to carry out a two-year field test and demonstration; and (4) to develop plans and strategies and assist in a systematic evaluation of the educational effectiveness of the PLATO IV system. Chapter 1 gives a brief account of PLATO history, a summary of the program, and a discussion of the results and their implications. Chapter 2 describes the methods by which the PLATO Service Organization provides author training, liaison, documentation, and other services to a large user community. Chapter 3 provides evaluation of system reliability, performance, use, and educational effectiveness, and presents a detailed case study in elementary mathematics. The next two chapters describe experience in the use of PLATO in mathematics and reading in elementary schools. Chapter 6 describes the community colleges program project, which has introduced PLATO curricula in accountancy, biology, chemistry, English and mathematics. Chapters 7 and 8 describe the experience with PLATO in the teaching of physics and chemistry at the university level. The final chapter discusses the continuous development of systems software for PLATO. (Author/VT)

**ED214549 JC810266

PLATO in the Community College: Students, Faculty and Administrators Speak Out.

Smith, Janet D.; And Others

Apr 1981 90p.; Paper presented at the Annual Convention of the American Educational Research Association (Los Angeles, CA, April 13-17, 1981).

EDRS Price -MF01/PC04 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

In the summer of 1979, Cuyahoga Community College (CCC) introduced the PLATO computer-based individualized instruction system as a supplemental teaching tool in remedial English and mathematics courses. As part of a comprehensive evaluation of the system, surveys of the attitudes of students, faculty, and administrators towards PLATO were conducted to obtain information to maximize student interaction with PLATO and student improvement in basic skills. Results of the pre- and post-course survey of 92 students in three developmental education classes indicated that students preferred PLATO to having a regular teacher; that they believed PLATO should be a component of regular classes; that the individualized instruction was helpful; and that tutorial assistance should be provided at the Learning Center. Responses to a questionnaire mailed to 95 administrators, faculty, and staff stressed the utility of PLATO as a system which allows instructors to select lessons that relate to individual or group weaknesses; the need for faculty and administrators to familiarize themselves with PLATO; and the system's disadvantages in terms of costs and possible breakdowns. Recommendations for possible directions for continued use of PLATO at CCC focused on developing faculty interest in the system, motivating students, student assessment, physical expansion, and evaluation. Questionnaires and an outline of the total evaluation design are appended. (HB)

Developmental Efforts: TICCIT

ED167606 TM008406

Evaluation of the TICCIT Computer-Assisted Instructional System in the Community College. Final Report. Volume I.

Alderman, Donald L.

Educational Testing Service, Princeton, N.J.

Sep 1978 544p.; For related document, see TM 008 407.

Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF02/PC22 Plus Postage.
Document Type: EVALUATIVE REPORT (142); RESEARCH REPORT (143)

An evaluation of TICCIT (Time-shared Interactive, Computer-controlled, Information Television) involved over 5,000 community college students in introductory algebra and English composition courses. Comparisons between computer-assisted instruction and lecture-discussion sections of the same courses focused on four aspects of student performance: course completion rates, achievement, attitudes, and activities (time allocation). Other evaluation questions focused on teacher attitudes, teacher role, and program implementation; including administration, site management, and courseware design goals. It was decided to construct objective and essay tests specifically for this program, to measure both end-of-course achievement and immediate learning. TICCIT had a significant positive impact on achievement. The dramatic decreases noted in course completion rates may be inherent in self-paced instruction because students who have trouble managing their own instruction are risks. Student attitudes towards TICCIT were often less favorable than toward conventional teaching methods, but attitudes improved when TICCIT couses were supplemented by small group discussion with an instructor. Results suggest that TICCIT may be inappropriate for community colleges since only those students with a strong initial grasp in the subject matter benefited substantially. In itself, computer assisted instruction is no panacea; results depend on factors involved in the instructional process. (CP)

ED167607 TM008407

Evaluation of the TICCIT Computer-Assisted Instructional System in the Community College. Final Report. Volume II. Appendices.

Alderman, Donald L.
Educational Testing Service, Princeton, N.J.
Sep 1978 372p.; Best copy available; For related document, see TM 008 406
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: EVALUATIVE REPORT (142); STATISTICAL MATERIAL (110)

These appendices contain outlines for the TICCIT (Time-shared Interactive, Computer-controlled, Information Television) mathematics and writing courses; a corresponding item classification for both achievement tests; and essay topics for the English achievement test. Blanks of all data collection forms are included--they concern course evaluation, student observation in the classroom, student registration, and faculty attitude and activities. Results of the data collection are reported, specifically, reasons for section selection; student demographic profile; course completion rates; enrollment in subsequent terms; test results; and summaries of the student and faculty surveys. Comparisons were made between TICCIT and traditional lecture sections wherever possible. (CP)

ED121328 IR003324

Tailor-Made Teaching through TICCIT.

Rappaport, Wanda; Olenbush, Elizabeth
Mitre Corp., McLean, Va.
Mitre Matrix, v8 n4 1975
1975 16p.; Photographs will reproduce poorly
EDRS Price - MF01/PC01 Plus Postage.
Document Type: JOURNAL ARTICLE (080)

Time-shared, Interactive, Computer-Controlled Information Television (TICCIT) is a computer-based system of instruction designed to provide low-cost, high-quality education that is completely individualized. Using inexpensive minicomputers, color television sets, and typewriter-like keyboards, TICCIT can serve as many as 128 students simultaneously. The system is designed to substitute for classroom instruction. It permits efficient use of instructional space, frees instructors from routine teaching tasks, and provides more flexible scheduling for individual students. TICCIT courses in English composition and mathematics have been installed in community colleges in Virginia and Arizona, and TICCIT courses form part of the curriculum of Brigham Young University. TICCIT systems are being used for training at several military installations. The newest application of TICCIT is in the area of special education. TICCIT programs serve severely handicapped, homebound children in Amherst, New York, and deaf students at the Model Secondary School for the Deaf in Washington, D.C. (Author/PF)

**ED217882 IR010268

State of the Art Developments in Established CAI Efforts--The TICCIT System.

Stone, David E.; And Others
Mar 1982 18p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS Price - MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)

This paper, presented at a symposium on computer-based instructional systems, discusses innovations in the TICCIT computer-based instructional system. Specific issues addressed include innovations in the system's authoring languages, integration of videodisc technology, instructional management systems, creation of color computer graphics using a digitizing camera, and two-dimensional simulations of instrument panels. Additional topics include a discussion of educational and psychological research that has influenced design and use of the system and planned developments in the system in the next 2 to 3 years. (Author)

Developmental Efforts: Training Teachers in Uses of Computers

ED183183 IR008125

Designing Instruction for Teaching with a Computer. The Illinois Series on Educational Application of Computers, No. 3e.

Alessi, Stephen M.; Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 28p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

A review of the major components of lesson planning and two conventional planning methods provides background for this explanation of the type of planning required when designing instruction for teaching with the computer. This "formal planning" includes the identification and articulation of the locical sequencing of both instructional events and instructional decisions, and planning sequences are nonlinear, taking a flowchart form, rather than being tightly tied to the days of the week. Discussion of the factors involved in formal planning includes decisions as instructional events, sequencing based on decisions, the organization of formal planning, and consturcting the flowchart; examples of first and second drafts of a flowchart for a series of lessons teaching the computer language BASIC are provided. This document was designed as a resource for preservice and inservice teacher training, and a study activity is provided, as well as a list of seven references. (CMV)

ED183193 IR008135

A Teacher's Introduction to Administrative Uses of Computers. The Illinois Series on Educational Application of Computers, No. 15e.

Baum, Madeline; Dennis, J. Richard, Ed.
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 23p.; Best copy available; For related documents, see IR 008 123-140, IR 008 142, and IR 008 144.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper presents an overview of administrative applications of computers and how they function to help teachers develop the ability to discriminate between well-and poorly-designed methods of using computers to solve administrative problems or accomplish administrative tasks. The administrative applications presented include school financial activities, student information, personnel information, and other management information. Eight problem situations are described as the basis for study activities in administrative uses of computers. Appendix A contains an outline of administrative computer applications in schools, and a list of 25 references in Appendix B. This is one of a series of papers prepared as resources for preservice and inservice training of teachers. (CMV)

**ED210015 IR009816

Technology, Systems and School Librarians: An Approach to Continuing Education.

Broadbent, Marianne; And Others
Sep 1980 15p. EDRS Price -MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

This paper describes a continuing education course designed to introduce school librarians to computer and communications technology as applied to indexing, cataloging, and networks, and to the principles and techniques of systems analysis. It is based on the premise that although computer and communications technology presents school librarians with great opportunities to develop more innovative approaches to information retrieval in the educational environment, education for sch… librarianship has only recently begun to deal with their implications and to design instruction for school librarians. The description also reviews the course objectives and scope, together with its structure and content, and examines the effect it has had on participants and library services in New South Wales. (Author/RAA)

ED176798 IR007782

Acquisition and Applications of Three Microcomputers by the Department of Secondary Education. The Illinois Series on Educational Application of Computers. Number 29.

Case, Jeff; And Others
Illinois Univ., Urbana. Dept. of Secondary Education.
Jan 1979 15p.; For related documents, see ED 138 286-288, ED 138 290, and ED 142 199
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

This report describes the experience of the Department of Secondary Education in acquiring and applying three microcomputers: MSEA, (Micro-Computer System for Educational Applications), North Star HORIZON, and VECTOR. MSEA was designed as a central facility that would be capable of providing all types of educational computing research and service, and would include all important computer peripherals. The North Star HORIZON microcomputer was chosen for its portability and power, to be used in workshops and other outreach in the schools and community colleges. The VECTOR microcomputer together with special software was designed and installed for the Office of the Graduate Dean in the College. Each of these microcomputers can be used for instructional or administrative applications and for research, teaching, or service to students and staff. The implementation of these systems has contributed not only to development of staff and computer uses in the College of Education, but to several research and development projects in the department. (JEG)

ED140774 IR004721

Computer Classification of Triangles and Quadrilaterals—A Challenging Application. Illinois Series on Educational Applications of Computers. Number 19.

Dennis, J. Richard
Dec 1976 15p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

Exercises for high school students are presented which entail designing computer programs to enable the computer to identify a geometrical figure as a specific type of triangle or quadrilateral, given its 2-dimensional coordinates. Computer programming skills required are not sophisticated, but a solution requires careful analysis of necessary and sufficient conditions for each figure type. If a computer is not available, flow chart solutions are possible. Flow chart samples of possible solutions to a variety of both triangle and quadrilateral identification problems are presented. (Author/STS)

ED183190 IR008132

Computer Managed Instruction and Individualization. The Illinois Series on Educational Application of Computers, No. 11e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 31p.; Best copy available; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper describes functions of a computer system for management of individualized instruction, details of a computer managed instruction (CMI) facility, the role of the teacher in utilizing a CMI system, and five programs which implement the concept of individualization with computer assistance. CMI system functions described include diagnosing, assigning or prescribing, facilitating study, evaluating, data collection and manipulation, reporting, resource and space management, providing an information network, and materials implementation. The computerized facilities which comprise a system are also described, including materials creation, individualized study/evaluation, records and reporting, resource management, and communication. A brief discussion of the teacher's role in CMI and a review of CMI systems--PLAN, TIPS, CISS, AIS, and TICCIT--are included. This resource for preservice and inservice teacher training includes study activities and a 31-item bibliography. (CMV)

ED183188 IR008130

Computer Simulation and Its Instructional Uses. The Illinois Series on Educational Application of Computers, No. 8e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 34p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper discusses computer simulation as a tool for teaching about phenomena characterized by a problem to be solved, a task or goal to be reached, a procedure to be learned, or an environment to be understood. Simulation is defined and characterized by an examination of both the attributes that are common to simulations, and a taxonomy (classification) of simulations based upon attributes not common to all instances of simulation. The many aspects of using simulations in the classroom are also discussed. This document was prepared as resource for the preservice and inservice training of teachers, and it points out that although simulations can be a valuable teaching tool, in order to use them effectively teachers need to be aware of their nature, what they can potentially provide in the way of learning experiences, and the provisions that must be made to optimize their use. A list of sources of existing simulations and a 27-item bibliography are attached. (Author/CMV)

ED183185 IR008127

Evaluating Materials for Teaching With a Computer. The Illinois Series on Educational Application of Computers, No. 5e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 26p.; Best copy available; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)

The details and process of evaluating computerized instructional materials are presented for the major classes of such materials, i.e., courseware--the set of computer programs with which the student interacts directly to learn--and instructional software--the instructional facilities, services, or general operations which include management and testing. Formative and summative evaluation, both used to evaluate conventional materials, are considered appropriate, but two different points of focus are indicated for use with computerized materials: the interaction focus and the subject matter focus. The interaction focus concentrates both on the mechanical aspects of interaction, e.g., the function of keyboards, and such logical and communication aspects of interaction as the dialogue with the student and the degree of individualization. The questions to be asked and the data to be gathered are provided for evaluating materials in each class, but it is pointed out that first hand experiences are mandatory to get a true measure of the characteristics and usefulness of any instructional computing program. This resource for preservice and inservice teacher training includes a study activity, two references, and a courseware evaluation worksheet. (CMV)

ED183197 IR008139

Practicum Activities for Training Teachers to Use Computers. The Illinois Series on Educational Application of Computers, No. 21e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 16p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper lists 25 objectives which computer-using teachers have designated as important for job success, and presents 11 relevant tasks to serve as a basis for practice and assessment of the objectives. These tasks deal with instructional planning, question episodes, lesson evaluation, tutorial computer assisted instruction, drill and practice, individualization and computer managed instruction, simulation, instructional games, computerized testing, hardware operation, and hardware purchasing. A background reference is cited for each task. (CMV)

ED183184 IR008126

The Question Episode--Building Block of Teaching with a Computer. The Illinois Series on Educational Application of Computers, No. 4e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 16p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper presents the notion of a "question episode," the smallest complete unit of computer-student interaction in computer assisted instruction, and describes such important elements as question types, student input, interpretation of student inputs, computer replies, and duration limits. Included are some guidelines to help determine the quality of question episodes found in computerized lessons. This resource for preservice and inservice teacher training suggests two study activities and lists one reference. (Author/CMV)

ED183181 IR008123

Teacher Education in Use of Computers. The Illinois Series on Educational Application of Computers, No. 1e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 23p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141)

Two model programs have been developed for preservice and inservice training of teachers in the instructional applications of computers. The preservice model features a background in computer science, foundations of instructional computing using a total school view and content specific view, a task-centered practicum in instructional computing, and practice teaching. The inservice training model consists of three stages: (1) initial literacy, (2) implementation, and (3) maintenance or growth. Curriculum maps are provided for both programs and three references are listed. (CMV)

ED183182 IR008124

A Teacher's Introduction to Educational Computing. The Illinois Series on Educational Application of Computers, No. 2e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 18p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper is designed to provide the educator with an overview of instructional applications of the computer, along with important issues related to each application. Applications discussed include computer managed instruction, drill and practice, simulation, computer assisted testing, instructional games, tutorials, problem solving, and classroom management. Some ways that teachers have started bringing computers into their schools are listed, as well as two references. This is one of a series of monographs prepared as resources for the preservice and inservice training of teachers. (CMV)

ED183186 IR008128

Tutorial Instruction on a Computer. The Illinois Series on Educational Application of Computers, No. 6e.

Dennis, J. Richard
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 11p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This paper describes a tutorial lesson to give teachers a model against which to compare and contrast a variety of instances of such lessons, and to help them to eventually come to a personal position on what constitutes a tutorial computer lesson. Three flow charts are provided as examples of tutorial style episodes. This resource for preservice and inservice teacher training includes a suggested study activity. (Author/CMV)

ED183189 IR008131

Instructional Games and the Computer-Using Teacher. The Illinois Series on Educational Application of Computers, No. 9e.

Dennis, J. Richard; And Others
Illinois Univ., Urbana. Dept. of Secondary Education.
1979 22p.; For related documents, see IR 008 123-139.
Sponsoring Agency: EXXON Education Foundation, New York, N.Y.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)

This discussion of games--particularly computerized games--and their potential in schools addresses several topics: what games are, types of games (free-form, rigid-form, or open-form) and their educational applications, the role of games in learning, student participation in adapting existing games for computer presentation, and special classroom management problems the teacher must plan for. This is one of a series of documents prepared as resources for the preservice and inservice training of teachers, and a 24-item bibliography is attached. (CMV)

ED138279 IR004708

A Study of Computer Simulations for Environmental Science Education. Illinois Series on Educational Applications of Computers. Number 2.

Dirks, Douglas; And Others
Feb 1975 45p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

This report describes Huntington simulations--computer programs and associated off-line materials for the teacher and for the students. Separate guidelines for choosing a simulation are presented for the curriculum planner and for the teacher. The Huntington simulation, POLUT, is the example which is used. Modifications to this program and its materials are described, and a role-playing game is outlined that will initiate consideration by the students of the value orientations that affect decisions about environmental issues. (DAG)

**ED211039 IR009777

Instructional Use of Microcomputers: A Report on B.C.'s Pilot Project. Discussion Paper 03/81.

Forman, Denyse
British Columbia Dept. of Education, Victoria.
Sep 1981 124p.
EDRS Price -MF01/PC05 Plus Postage.
Document Type: RESEARCH REPORT (143)

A three-phase exploratory study was conducted to make available to British Columbia schools the best in microcomputer hardware, to assist project coordinators and teachers in the integration of microcomputer courseware into the established curriculum, and to evaluate the project. In the first phase, the Apple II Plus with 48K was selected for use, 12 pilot sites were chosen from the 50 proposals submitted, and inservice training was provided for teachers. The second phase concentrated on the integration of courseware into the curriculum and the development of quality curriculum-related courseware. In addition to serving as a center for the gathering and sharing of information on instructional uses of microcomputers, the project team from JEM Research developed an index of educational courseware for the Apple II, a courseware evaluation instrument for use by curriculum selection committees, and a reference manual with guidelines for courseware development. The third phase, running concurrently with the second, continued research into hardware, software, courseware, and applications; provided field liaison services; and surveyed participants to identify microcomputer uses, teacher preparedness, opinions, and perceived needs. Survey data, conclusions, and recommendations conclude the report. A literature search and a 57-item bibliography are attached. (LLS)

**ED213396 IR010018

Computers Don't Byte. A Starting Point for Teachers Using Computers. A Resource Booklet.

Lieberman, Michael; And Others
Ontario Secondary School Teachers' Federation, Toronto.
1981 82p.
Available from: Ontario Secondary School Teachers' Federation, 60 Mobile Drive, Toronto, Ontario, Canada M4A 2P3 ($4.00).
EDRS Price -MF01/PC04 Plus Postage.
Document Type: TEACHING GUIDE (052); REVIEW LITERATURE (070)

Designed to provide a starting point for the teacher without computer experience, this booklet deals with both the "how" and the "when" of computers in education. Educational applications described include classroom uses with the student as a passive or an active user and programs for the handicapped; the purpose of computers in education as set forth by Seymour Papert in "Mindstorms"; administrative uses; cataloging computer courseware; in-house production of educational programs; and using the computer to retrieve information and in resource sharing. Also included are a review of ministry activities and discussions of such professional issues as health hazards of video display terminals, teaching styles, staffing, teacher training, copyright, obsolescence, budgeting, career planning, sexism, haves and have nots, and psychological barriers. A brief history of computers is followed by explanations of computer technology, computer logic, and programming languages, with samples and illustrations; a checklist for buying a microcomputer is included. Resources listed include books, periodicals, audiovisual materials, organizations, and continuing education programs. A glossary of computer terms and acronyms is also provided. (MER)

ED183200 IR008144

Documentation—A Computerized Instructional Resource Management System. The Illinois Series on Educational Application of Computers, No. 26e.

Lockard, Henry; Cox, John

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 90p.; Best copy available; The computer printout (p.46-68) may not reproduce; For related documents, see IR 008 123-140, and IR 008 142.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS. Language: English

Document Type: NON-CLASSROOM MATERIAL (055); AUDIOVISUAL MATERIAL (100)

This paper, which describes a computerized appointment scheduling system for individualized instruction from the point of view of the teachers and students who will use it, also includes more technical data for those readers who are familiar with the BASIC language. A guide to the logic, possible modifications, and a program listing are included, as well as a discussion of some of the less common BASIC statements used in the system to assist in various commands. The opening user's guide is intended to help those not necessarily familiar with BASIC to learn how to use the system, while the more technical programmer's guide which follows includes file structure, new semester/new teacher user program changes, other modifications and conversion (transportability) guidelines, code description, variables used, and program listing. (Author/CMV)

ED138292 IR004722

Procurement Policy in CAI Systems. Illinois Series in Educational Application of Computers. No. 21.

Muiznieks, Viktors J.

Feb 1977 21p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

The use of computers for both administrative and/or instructional activities in secondary schools is increasing. In acquiring, maintaining, and expanding computer resources, decisions must be made regarding both products and services. This report identifies the issues and concerns related to procurement policy decisions, and guidelines are given for addressing each of the identified concerns. (DAG)

ED183198 IR008140

Documentation of CTRS—Computerized Test-Result Reporting System. The Illinois Series on Educational Application of Computers, No. 22e.

Muiznieks, Viktors J.; Cox, John

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 72p.; Computer printout lists may not reproduce; see IR 008 123-139, IR 008 142, and IR 008 144.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055); AUDIOVISUAL MATERIAL (100)

The Computerized Test-Result Reporting System (CTRS), which consists of three programs written in the BASIC language, was developed to analyze obective tests, test items, test results, and to provide the teacher-user with interpreted data about the performance of tests, test items, and students. This paper documents the three programs from the viewpoints of both the potential user in a school system who is not necessarily familiar with computers, and the computer programmer wishing to examine the structure of the system or seeking to modify the programs for use on a computer system using a different version of BASIC language. In this paper, the programs are described as they were written in Version 1.0 of the ICOM-DEBBI brand of BASIC. The three programs are PREP, a preparation program used to convert unformulated student answers into a more readily graded form; GRADE, a test grading and analysis program used to produce student results, item analysis, and test reliability results, and to output this information in printed form; and DUMP1, which is used to obtain cumulative statistics about CTRS use for more detailed analysis. Appendices include sample output from GRADE and DUMP1, as well as program listings, variables, and flow diagrams for the three programs, and the TEXT file. (Author/CMV)

ED183191 IR008133

A Look at Computer-Assisted Testing Operations. The Illinois Series on Educational Application of Computers, No. 12e.

Muiznieks, Viktors; Dennis, J. Richard

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 48p.; Best copy available; For related documents, see IR 008 123-139.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

In computer assisted test construction (CATC) systems, the computer is used to perform the mechanical aspects of testing while the teacher retains control over question content. Advantages of CATC systems include question banks, decreased importance of test item security, computer analysis and response to student test answers, item analysis assistance, capability of being integrated into individualized instructional programs, performance of clerical tasks, system availability, and question generation following a prespecified pattern. Major features of CATC systems include item banking, generation, attribute banking, and selection, as well as test scoring, printing, and interactive computer testing in linear and branched formats with sequential and multi-staged approaches. Major limitations of CATC systems include possible lack of lower case letters, character type limitations, lack of pictorial information presentation capability, no backspacing capability, difficulty in printing subscripts or superscripts, and inability to control the quality of item bank materials. Five existing CATC projects are described, and relative costs of CATC are discussed. This resource for preservice and inservice teacher training includes an 85-item bibliography. (CMV)

**ED217878 IR010264

Graduate Studies in Computer-Based Education at the Ontario Institute for Studies in Education.

Rubincam, Irvin

Mar 1982 18p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This overview of the programs, activities, and facilities relating to computer-based education at the Ontario Institute for Studies in Education (OISE) includes, (1) a brief account of the history and mission of OISE; (2) a description of the OISE Computer Applications Department and its merger with the Department of Measurement and Evaluation in 1976; (3) a summary of courses in Computer Applications offered through OISE; (4) a discussion of the computing and other related educational technology resources and facilities, and the uses to which these are put at OISE; (5) an outline of the relationship between the Educational Computing Organization of Ontario (ECOO) and OISE; and (6) a description of the types of positions accepted by OISE Computer Applications program graduates. Two figures accompany the text. (JL)

ED183187 IR008129

Drill and Practice on a Computer. The Illinois Series on Educational Application of Computers, No. 7e.

Stewart, James T.

Illinois Univ., Urbana. Dept. of Secondary Education.

1979 24p.; Best copy available; For related documents, see IR 008 123-139.

Sponsoring Agency: EXXON Education Foundation, New York, N.Y.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

When designing a computerized drill and practice lesson, the teacher should (1) select the content and processes of the lesson to match the content and processes of the initial instruction, (2) present a variety of stimulus presentations for an item, (3) select constructed or non-constructed response modes by the type and complexity of the material being practiced, (4) provide appropriate feedback for a student's response, (5) systematically select the next appropriate item to be presented, (6) have some appropriate lesson termination strategy, and (7) update records and report the student's score in some meaningful manner. A sample program of a general drill and practice lesson is presented and described. This resource for preservice and inservice teacher training provides study questions and a 14-item bibliography. (Author/CMV)

**ED218703 EA014626

The First Step in Utilizing Computers in Education: Preparing Computer Literate Teachers.

Wells, Malcolm; Bitter, Gary
Apr 1982 13p.; For a related document, see EA 014 627.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

As a result of a survey concerning computer assisted instruction in Arizona schools, Arizona State University developed a program to assist districts in computer instructional program development. In the initial planning phase of the program, a list was drawn up of preparatory functions essential for districts making a transition to computer assisted instruction. This list included inservice programs, curricular modifications, and selection of courseware and hardware. The program was funded for 1981-82. Phase I provided orientation for administrators. Phase II was a 4-week summer institute to train 30 Arizona teachers as resource people able to introduce their districts to computer assisted instruction. The institute covered 10 topics, including: computer systems and logic; introduction to programming techniques; introduction to computer languages; authoring techniques; software selection and review; hardware selection; preparation for computer assisted instruction; computer literacy; and preparation of an inservice program on computer assisted instruction. Ten teams prepared inservice programs such as the one briefly summarized in this report. The summer institutes were evaluated by an attitudinal survey indicating that most participants had positive attitudes toward computers and instruction by peers but experienced frustration when attempting programming. Future recommendations were for more time to be spent on user skills and less on programming and authoring. The program was enthusiastically received. (Author/JM)

Developmental Efforts: LOGO

**ED190049 IR008520

The LOGO-S Language and the Portable LOGO System. Volume I: Language and System Descriptions. Volume II: Program Listings. Report No. 3968.

Feurzeig, Wallace; And Others
Bolt, Beranek and Newman, Inc., Cambridge, Mass.
1980 580p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF03/PC24 Plus Postage.
Document Type: AUDIOVISUAL MATERIAL (100); PROJECT DESCRIPTION (141)

This two volume report presents descriptions of LOGO-S, an interactive programming language expressly designed for education, and the portable LOGO system, a computer software development. The modular structure of LOGO, along with its simple but powerful extension features, is naturally suited to problem solving in many problem domains with students at all levels of education. To make LOGO widely available on diverse computer systems the portable LOGO system is being developed. This software system greatly reduces the amount of work and the level of skill required to implement LOGO on minicomputers and microcomputers. The major products of this project are: (1) the design and specification of a proposed standard LOGO language, LOGO-S; (2) the development of a portable LOGO system for implementation of LOGO-S; and (3) comprehensive documentation of LOGO-S and the portable LOGO system for use by implementors. Language description provides the syntax and a glossary of LOGO-S. Volume I presents an overview, including the implementation language, the host environment, global data structures of the LOGO machine, a description of the machine, and the LOGO-S environment; Volume II provides program listings for the current working version. Advice to implementors and a bibliography of 45 citations are included. (Author/RAA)

**ED207801 SE035491

Final Report of the Brookline LOGO Project, Part II: Project Summary and Data Analysis. Artificial Intelligence Memo No. 545.

Papert, Seymour; And Others
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Sep 1979 223p.; For related document, see SE 035 492.
Sponsoring Agency: National Science Foundation, Washington, D.C.
Available from: Artificial Intelligence Lab., 545 Technology Square, Rm. 338, Cambridge, MA 02139 ($4.00).
EDRS Price - MF01/PC09 Plus Postage.
Document Type: RESEARCH REPORT (143)

During the school year 1977-78, four computers equipped with LOGO and Turtle Graphics were installed in an elementary school in Brookline, Massachusetts. All sixth-grade students in the school had between 20 and 40 hours of hands-on experience with the computers. The work of 16 students was documented in detail. The volume includes: (1) an overview of the Brookline LOGO project; (2) a description of the learning styles of different students who took part in the project; (3) the experience of students at both extremes of the range of abilities present in a typical public school; (4) a breakdown of the computer programing skills and concepts learned by the students during the course of the project; (5) a breakdown of the mathematical and geometrical skills and concepts learned by the students during the course of the project; and (6) a description of the results of a brief exposure of students to a dynamic turtle which simulates Newtonian motion. (Author)

**ED207802 SE035492

Final Report of the Brookline LOGO Project, Part III: Profiles of Individual Student's Work. Artificial Intelligence Memo No. 546.

Watt, Daniel
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
Sep 1979 224p.; For related document, see SE 035 491.
Sponsoring Agency: National Science Foundation, Washington, D.C.
Available from: Artificial Intelligence Lab., 545 Technology Square, Rm. 338, Cambridge, MA 02139 ($4.00).
EDRS Price - MF01/PC09 Plus Postage.
Document Type: RESEARCH REPORT (143)

During the school year 1977-78, four computers equipped with LOGO Turtle Graphics were installed in an elementary school in Brookline, Massachusetts. All sixth-grade students in the school had between 20 and 40 hours of hands-on experience with the computers. The work of 16 students was documented in detail. The profiles, written by the classroom teacher, are discursive essays on the experiences of each of the sixteen experimental subjects. This illustrates the wide variety of learning styles and learning paths within the LOGO learning environment. They are particularly useful for teachers who anticipate using LOGO with children, and offer a rich source of project ideas suitable for naive programers. (Author)

**ED207576 IR009692

Using Computer Technology to Provide a Creative Learning Environment for Preschool Children. AI Memo 360.

Perlman, Radia
Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
May 1976 32p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

TORTIS is a system of special terminals together with software which is designed to provide programming capability and be accessible for use by very young children. The system is designed to add capabilities in small increments so that the child is never overwhelmed by too much to learn at one time, and maintains a feeling of control over the environment. This system facilitates learning of various concepts such as relative size of numbers, frames of reference, procedures, conditionals, and recursion, but more importantly it teaches good problem solving techniques and a healthy approach to learning. There are improvements which can be made to the TORTIS system; however, certain research must be undertaken before they may be implemented. Twelve references are listed. (Author/LLS)

**ED204812 CS206527

Grammar as a Programming Language. Artificial Intelligence Memo 391.

Rowe, Neil

Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

Oct 1976 26p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141)

Student projects that involve writing generative grammars in the computer language, "LOGO," are described in this paper, which presents a grammar-running control structure that allows students to modify and improve the grammar interpreter itself while learning how a simple kind of computer parser works. Included are procedures for programing a computer to write postcards, sentences, poetry, and music; (1) draw a robot face, snowflakes, hydrocarbon structures, and hills; (2) introduce context sensitivity; (3) define number theory; and (4) parse or analyze word strings. (AEA)

**ED205206 IR009510

The Effects of Learning a Computer Programming Language on the Logical Reasoning of School Children.

Seidman, Robert H.

14 Apr 1981 63p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April 14, 1981).

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

The research reported in this paper explores the syntactical and semantic link between computer programming statements and logical principles, and addresses the effects of learning a programming language on logical reasoning ability. Fifth grade students in a public school in Syracuse, New York, were randomly selected as subjects, and then randomly placed in either the experimental or the control group. The experimental group was taught LOGO, a programming language developed for use with young children, while the control group received no special instruction. At the end of the treatment period, both groups were administered a series of tests measuring their conditional reasoning abilities. tests were scored in two distinct ways, and the two groups were statistically compared within both scoring schemes by split-plot two-factor repeated measures and one-way analysis of variance. It was found that students in the experimental group who interpreted conditional logic statements biconditionally performed significantly better on the inversion fallacy principle than the control group; no significant difference was found when test items were scored in the traditional manner. Comparison of pre- and post-experiment achievement test scores showed a significant improvement in reading only for the control group. Some areas for further research are suggested, and a 64-item bibiography is attached. (MER)

**ED207578 IR009696

A Case Study of a Young Child Doing Turtle Graphics in LOGO. AI Memo 375.

Solomon, Cynthia J.; Papert, Seymour

Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

Jul 1976 10p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.; National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This paper describes and comments on a seven year old's experiences with turtle graphics in order to explore some important issues with regard to using computers in education and to probe into the question of what programming ideas and projects will engage young children. The case study which is described took place at the Artificial Intelligence LOGO Lab at the Massachusetts Institute of Technology where the child, a second grader, spent several hours on a consecutive Saturday and Sunday, talking in LOGO to a display turtle and a PDP-11/45 computer, and engaging in debugging sessions. Nine references are listed. (Author/LLS)

**ED207575 IR009691

Leading a Child to a Computer Culture. AI Memo 343.

Solomon, Cynthia J.

Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

4 Dec 1975 7p.; Paper presented at SIGCSE-SIGCUE Symposium (Anaheim, CA, February 1976).

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This paper describes the way in which a child is introduced to LOGO, which is both a programming language and an environment or a way of thinking about computers and about learning. After a brief description of the devices used by LOGO, the process of acquainting a student with the system is explained. The strong anthropomorphization of components of the LOGO system is discussed, with emphasis on the computer controlled mechanical turtles and display turtles used in the system. Also discussed is the importance of having children learning to use LOGO to think of their projects as research enterprises. The 23 references listed include 11 working papers, memos, and reports on LOGO. (LLS)

Basic Research: Methodology

ED157542 IR006170

Problems in Conducting Research on Computer-Based Simulation.

Crawford, Alice M.

Apr 1978 19p.; Paper presented at the Annual Meeting of the American Educational Research Association (Toronto, March 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Computer-based simulation (CBS) represents a unique utilization of computers for instruction that combines some of the best features of the technologies of simulation and computer assisted instruction (CAI). CBS grew out of an interest in testing the application of CAI to procedural and perceptual motor skills. With the sophisticated graphics capabilities curently available in many CBS systems, it is possible to program dynamic, two-dimensional representations of physical objects to be displayed on the screen of a computer terminal. Research suggests that advantages of CBS for training include increased trainee proficiency, time savings, cost effectiveness, and student acceptance. The overall recommendation for research in this area is to approach CBS training with a futuristic orientation to ensure maximal utilization of newly emerging technologies. (Author/CMV)

ED156155 IR006137

Problems in Researching Course Adequacy.

Romaniuk, E. W.

Mar 1978 32p.; Paper presented at the Annual Meeting of the American Educational Research Association (Toronto, Canada, March 1978)

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Without rigorous evaluation during the development cycle of computer assisted instruction programs, diagnosis and revision of the courseware is likely to be haphazard and inefficient, and the probability of the course being a success is greatly reduced. This article provides guidance for developers of computer assisted instructional software in performing formative evaluations of their programs. Techniques discussed include: (1) peer review of lesson scripts, (2) automatic computer support programs, (3) single student tests, (4) small group tests, (5) class tests, and (6) field tests. Diagnosis and revision of courseware is discussed with emphasis placed on systematic analysis of student performance on both the micro and macro levels. (Author/STS)

ED156173 IR006161

Problems in Researching Computer Managed Instruction.

Van Matre, Nicholas H.

Mar 1978 10p.; Paper presented to the American Educational Research Association (Toronto, Canada, March 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

The development phases of an operational computer managed instruction (CMI) system include planning, when the instructional model is designed; acquisition, when instructional system specifications are prepared; implementation/operation, which provides for the resolution of operational problems; evaluation, when the system is tested; and refinement, which provides for the improvement of system functioning and capabilities based on evaluation results. Five problems which may impact on the conduct of R&D during any of these phases are noted: (1) few off-the-shelf solutions exist; (2) hardware and software commitments limit R&D solutions; (3) solutions may not be practical; (4) research and operational personnel may not agree on R&D; and (5) research may be incompatible with operational training. A brief description of a joint venture between the Technical Training Command and the Navy Personnel Research and Development Center provides some insight into the problems encountered and the general R&D approach the Navy is using to overcome them. (BBM)

ED156156 IR006138

Problems in Researching Learner Control.

Walker, Richard A.

1978 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (Toronto, Canada, March 1978)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Some of the problems that occur for researchers using the TICCIT computer assisted instructional system are described. The underlying learning strategy of the TICCIT system states that the student rather than the developer is best able to select the order of instructional frames. In order to successfully engage in research with the TICCIT system, students must be placed in a setting where learner control is expected of them and in which they can manifest learner control behavior. Successful TICCIT research also requires that the system be flexible enough to be adapted to a variety of research designs, and that the researcher plan in advance for efficient data reduction. (Author/STS)

Basic Research: Theories and Models

ED137165 SO009878

Simulation Gaming: A Critical Review.

Roberts, Nancy

1976 25p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

The review of the empirical literature on simulation gaming categorizes positive, negative, and contradictory aspects of gaming as an educational tool as revealed by the research. The review, which concentrates on simulation games for elementary and secondary school students, is presented in seven sections. Section I presents a brief history of gaming. Section II assesses data in recent gaming literature on learning versus interest in role playing. The importance of background knowledge and abilities that students bring to games is discussed in section III, followed by identification of the problems and positive aspects of role playing in sections IV and V. Problem areas include lack of role involvement, boredom, and the similarity of all simulation games. Positive aspects include the changed role of the teacher, the socialization process that occurs during the game, and the ability of games to teach complex problems in the classroom. Section IV discusses computerized games, the contribution of computers to gaming, and the increased sense of efficacy experienced by students using computerized games. The last section summarizes the literature on gaming by listing the positive aspects of gaming, the major drawbacks, and the benefits which result from the new computerized games of strategy. References are included. (Author/DB)

**ED208017 TM810706

Complex Learning Processes.

Anderson, John R.; And Others

Yale Univ., New Haven, Conn. Dept. of Psychology.

18 Jul 1978 94p.

Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.

EDRS Price - MF01/PC04 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

The ACT theory of the learning of procedures is described. ACT is a computer simulation program that uses a propositional network to represent knowledge of general facts and a set of productions (condition action rules) to represent knowledge of procedures. There are currently four different mechanisms by which ACT can make additions and modifications to its set of productions as required for procedural learning: designation, strengthening, generalization, and discrimination. Designation refers to the ability of productions to call for the creation of new productions. Strengthening a production may have important consequences for performance, since a production's strength determines the amount of system resources that will be allocated to its processing. Finally, generalization and discrimination refer to complementary processes that produce better performance by either extending or restricting the range of situations in which a production will apply. Each of these four mechanisms is discussed in detail and related to the available psychological data on procedural learning. The small-scale simulations of learning provided as examples are drawn from the domains of language processing and computer programming, since our ultimate goal is for ACT to learn the complex procedures required in such domains. (Author/GK)

ED154400 CS204128

Studies in Spelling: Theory and Practice.

Block, Karen K.

Sep 1976 22p.; Paper presented at the Annual Meeting of the American Psychological Association (Washington, D. C., September 1976)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

One cognitive theory of spelling states that the spelling of words can be produced in one of three ways, depending on the amount and kind of information stored in the memory about a particular word. Assuming this theory as a foundation, this study reviewed two forms of computer assisted instruction developed in an effort to build an instructional theory for teaching spelling. One instructional mode stressed memory structure while the other permitted practice in the generation of spelling patterns. A key component in both was the assumption of a phoneme generator, or lists of spelling patterns that are associated with the phonemes they spell. Analysis of the data regarding the children's performance in both programs supports the basic cognitive theory and supplies significant information on the various stages of the learning process: encoding, rehearsal, and entry into long-term memory. (MAI)

**ED 216 330 CS 006670

I Use the Computer to ADVANCE Advances in Comprehension-Strategy Research.

Blohm, Paul J.

University of Southwestern Louisiana, Lafayette.

Jun 1982 24p.; Paper presented at the Reading Symposium on "Factors Related to Reading Performance" (Milwaukee, WI, June 10-11, 1982).

EDRS Price - MF01/PC01 Plus Postage.

Merging the instructional implications drawn from theory and research in the interactive reading model, schemata, and metacognition with computer based instruction seems a natural approach for actively involving students' participation in reading and learning from text. Computer based graphic organizers guide students' preview or review of lengthy readings. The graphic preorganizers present visual displays of key terms and concepts arranged diagrammatically to depict the major concepts so that the organizational pattern can be identified in a way that relates the new information to existing schema. Postorganizers encourage students' self-interrogation of their ability to reorganize, consolidate, and review the text content just read. With the use of computer based glossing, the reader sees no gloss notations until the computer is signalled through a HELP command to present one. At the same time, the reader is constantly involved in metacognitive decision making about which gloss notations might have to be signalled to gain or maintain understanding. Other features of the glossing system are a statistics file that allows for the administration of consistent directions and collection of accurate data, and a text-authoring system that allows noncomputer-oriented teachers to build their own computer based glossing actitivities to promote comprehension strategies. (HOD)

ED178304 SE028871

Response Mode Effects on Computer Based Problem Solving. Report Series 1979.

Brown, Bobby R.; Sustik, Joan M.

Iowa Univ., Iowa City. Computer Center.

1979 15p.; For related document, see ED 154 831; Tables contain small print which may not reproduce well

Available from: Director, CAI Laboratory, Weeg Computing Center, The University of Iowa, Iowa City, IA 52242 (no price quoted)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This response mode study attempts to determine whether different response modes are helpful or not in facilitating the thought process in a given problem solving situation. The Luchins Water Jar Test

(WJT) used in this study illustrates the phenomena "Einstelling" (mechanization of response) because it does not require any specialized content information. The author discusses the results which indicate that there is no reason to prefer constructed response mode over multiple choice or numerical list modes when considering set formation and breaking out of set. (Author/SA)

ED159036 SE024854

Diagnostic Models for Procedural Bugs in Basic Mathematics Skills.
Brown, John Seely; Burton, Richard R.
Bolt, Beranek and Newman, Inc., Cambridge, Mass.
Dec 1977 66p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.; Navy Personnel Research and Development Center, San Diego, Calif.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

A new diagnostic modeling system for automatically synthesizing a deep structure model of a student's misconceptions or bugs in his/her basic mathematics skills provides a mechanism for explaining why a student is making a mistake as opposed to simply identifying the mistake. This report consists of four sections. The first provides examples of the problems that must be handled by a diagnostic model. It then introduces procedural networks as a general framework for representing the knowledge underlying a skill. The second section discusses some of the pedagogical issues that have emerged from the use of diagnostic models within an instructional system. This discussion is framed in the context of a computer-based tutoring/gaming system developed to teach students and student teachers how to diagnose bugs strategically as well as how to provide a better understanding of the underlying structure of arithmetic skills. The third section describes our uses of an executable network as a tool for automatically diagnosing student behavior, for automatically generating "diagnostic" tests, and for judging the diagnostic quality of a given exam. Included in this section is a discussion of the success of this system in diagnosing 1300 school students from a data base of 20,000 test items. The last section discusses some future research directions. (Author/MN)

ED142991 CS003636

The Relationship between Reasoning Ability and Gain in Reading Ability. Final Report.
Carver, Ronald P.
Missouri Univ., Kansas City. School of Education.
Aug 1977 106p.; Some pages may not reproduce well due to small type
Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS Price - MF01/PC05 Plus Postage.
Document Type: RESEARCH REPORT (143)

The effect of reading practice upon reading ability was investigated in three separate studies, with six high school students in each study. Each student was given 50 to 70 hours of individualized instruction on a PLATO IV computer terminal. Half of the students in each study were selected on the basis of high scores on the Raven Progressive Matrices Test; the other half had low scores. Results indicated that the high Raven groups did not gain more than the low Raven groups. When gain in reading was measured using a test like the task employed in the reading training, a large gain was evident. When gain was measured using other techniques, there was little or no evidence that the reading practice had produced gain. The research failed to find a relationship between reasoning ability and gain in reading ability, but this could have been due to ineffective techniques used to produce gains in reading or to ineffective techniques used to measure reasoning ability. (Author/AA)

**ED216863 SE037270

Measurement and Analysis of Logical Thinking. Final Technical Report.
DeLuca, Frederick P.
Iowa State Univ. of Science and Technology, Ames.
26 Mar 1980 20p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

Four Piagetian tasks (bending rods, chemical combinations, balanced beams and lights/switches) were programmed on a microcomputer system to rectify perceived deficiencies in the tasks. These deficiencies included misleading perceptual clues, bias against females, familarity with content and task, and high cost of administration and data collection. A microcomputer system for recording and measuring logical thinking ability was developed and tested in experiments designed to study: (1) the ability of subjects (N=394) to demonstrate logical thinking with two kinds of content (physical science and social-psychology); (2) patterns of logical thinking under two kinds of instruction (global and differentiated); and (3) automation of data collection. Findings from these studies indicate that: (1) the microcomputer is a useful tool for studying logical thinking; (2) teacher-learning variables can produce significant gains at the concrete operational level for college students, but gains at the formal operational level are more difficult; and (3) successful problem solvers tend to use relatively few, but highly efficient patterns. Nine advantages (including a significant reduction of task bias against female subjects) and four disadvantages of the microcomputer system are listed and discussed. (Author/JN)

**ED215207 CE032110

Changes in the Cognitive Components of Achievement as Students Progress Through Sequential Instruction.

Federico, Pat-Anthony

1982 53p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 1982).

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Ascertaining changes in cognitive correlates of learning as students advanced through hierarchical instruction, 24 individual difference measures were obtained from 166 Navy trainees who had completed a computer-managed mastery course in electricity and electronics. Three types of cognitive characteristic measures were used in the study--tests of cognitive styles, abilities, and aptitudes. The instructional treatment consisted of the first 11 modules of the Basic Electricity/Electronics School curriculum. This involved computer managed instruction (CMI) to implement the mastery learning of the subject matter of the modules. The students self-studied and self-paced themselves through lesson modules off-line. From the tests of cognitive characteristics, principal component analysis and varimax rotation were computed, producing factor scores which were used in multiple regression analyses to predict achievement in the 11 modules of instruction. Results indicated that considerable changes occurred in the cognitive predictors of achievement as students progressed through the modules. During the acquisition of course content, the cognitive components sampled shifted noticeably in importance throughout the curriculum. These results seemed to imply that it is not only the content of instruction which matters, but also the task demanded of the students as they progress through the course that determine the nature of the relationship of cognitive style to achievement. The results have implications for research on transition from novice to expert, crystallized and fluid intelligence, task demands of instruction, and computer-managed mastery learning. (Author/KC)

ED125545 IR003629

The Effects of Locus of Control on CAI Performance.

Fredericks, Patricia S.

Apr 1976 8p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 19-23, 1975)

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Two versions of a computer-assisted instruction practice lesson on series resonant circuit analysis were compared. One was a program control version which required considerable time for students to reach criterion level. The other program was a revised student control version of the same lesson. In the program control version, quantity of practice was determined by an adaptive branching algorithm based on student performance; the student control version made practice prior to a criterion item optional. Subjects were 84 trainees in basic electricity/electronics at the Naval Training Center in San Diego. Those using the student control program showed a marked time savings over those using program control, and student control of training produced more uniform performance. Large time savings and increased test scores supported the hypothesis that a knowledgeable student can realistically estimate when he has mastered the practice material. (CH)

**ED217867 IR010253

Taxonomy of Instructional Strategies for Computer Based Education.

Hall, Keith A.; And Others

Ohio State Univ., Columbus.

1981 12p.

Sponsoring Agency: Control Data Corp., Minneapolis, Minn.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070); EVALUATIVE REPORT (142)

As a means of providing suggestions for improving the quality of the courseware used in computer based education (CBE), this report reviews and evaluates current thought and research on the origins, characteristics, and effectiveness of existing approaches to courseware design. After a brief summary of some of the general problems encountered in courseware design, instructional strategies based upon the structure of knowledge, levels of learning, learner differences, and questioning techniques are outlined and the implications of each type of strategy for courseware development are discussed. A summary of trends indicated by the literature concludes the report, and a 37-item reference list is attached. (JL)

ED157939 TM007348

Simulated and Empirical Studies of Flexilevel Testing in Air Force Technical Training Courses. Final Report for Period 1 May 1975-30 April 1977.

Harris, Dickie A.; Penell, Roger J.

Air Force Human Resources Lab., Brooks AFB, Texas.

Sep 1977 25p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This study used a series of simulations to answer questions about the efficacy of adaptive testing raised by empirical studies. The first study showed that for reasonable high entry points, parameters estimated from paper-and-pencil test protocols cross-validated remarkably well to groups actually tested at a computer terminal. This suggested that feasibility studies; i.e., running actual subjects, may not be called for. The second study showed that the proportion correct during flexilevel testing was a sensitive measure of student performance. It was also concluded that the modest time savings (12 to 15 percent) was due to the parameters used to implement flexilevel testing. Study III showed that a 50 percent savings in items, and, potentially, a large savings in test time could be realized through the implementation of alternative flexilevel strategies. In summary, the overall conclusion from the three studies was that flexilevel testing, with variable entry, offers an easily implemented testing procedure with potential for significant dollar savings at minimal risk. (Author/CTM)

ED165714 IR006277

Types of Student Feedback in Physical Diagnosis Lessons.

Kemp, Lawrence B.; And Others

Mar 1978 12p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see ED 160 072

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PAPER (150)

Different feedback formats were utilized on a series of computer assisted lessons on physical diagnosis for second year medical students. Each lesson in the series is broken down into four or five major sections; in each section, the student is presented with a list of possible actions to be taken. On each item, three forms of feedback, two of which are generated by the computer, are received. The first type of feedback is ranking the items on the list in the order in which the student would do them; this rating is then compared with that of the author and his peers. A correlation coefficient is obtained for each comparison. The second feedback component is that of the "good/bad" judgment. The student is asked on each entry in the list whether he feels a particular action is appropriate; his response is immediately compared with the author's and he is informed of the result. The final and more personalized form of feedback is a short essay in which the student gives his opinion on the action. These essays are then stored, and later printed out for the instructor to read, review, and comment on. Although very limited student feedback was available, generally the students liked the instructional design feedback features. (VT)

ED175453 IR007422

The Effect of Instructional Presentation Sequence on Student Performance in Computer-Based Instruction. Final Report.

Lahey, George F.

Naval Personnel Research Activity, San Diego, Calif. Navy Training Research Lab.

Jun 1979 22p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

This study compared the effects of several presentation sequences on lesson performance to deterimine whether sequence has a significant effect on performance in computer-based instruction, and whether using the same sequence consistently is more effective than not being consistent. Thirtysix students from the Basic Electricity and Electronics School, Service School Command, San Diego, were randomly assigned to one of four groups differing by the instructional presentation sequence used. The first group saw lessons in a rule-examples-practice sequence; the second, in an examples-rule-practice sequence; the third, in a practice-examples-rule sequence; and the fourth, in a random sequence. The lesson materials were three computer-based instruction lessons delivered via PLATO IV terminals, one on voltage in series circuits, and one each on using the Simpson Model 260-5P multimeter as an ammeter and as a voltmeter. There were no consistent differences in performance among the four groups during the three lessons. Conclusions and recommendations for further study of instructional sequencing are outlined. (Author/RAO)

**ED211049 IR009852

Learner Control of Instructional Sequence in Computer-Based Instruction: A Comparison to Programmed Control.

Lahey, George F.; Coady, James D.

Navy Personnel Research and Development Center, San Diego, Calif.

Mar 1978 31p.

Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

This study was conducted to determine whether learner control of lesson strategy is superior to programmed control in computer-based instruction (CBI), and, if so, whether learner control is more effective when guidance is provided. Subjects were 164 trainees assigned to the Basic Electricity/Electronics School in San Diego. They were randomly assigned to three experimental treatment groups (unguided learner control, guided learner control and programmed control) and a control group. Lesson materials and objectives were the same for all groups; however, experimental groups used PLATO IV student terminals, while the control group used lesson booklets. Within-lesson performance of and lesson strategies used by the experimental groups were compared as well as the performance of the control and experimental groups on the post lesson performance tests and module examinations. Results indicate that learner control, with or without guidance, is not superior to programmed control as a CBI mode. However, the use of the learner control lesson structure may be desirable because of the possible economies to be effected. Also, since it appears that the rule-example-practice lesson strategy may prove to be optimum for all students, consideration may be given to delivering this strategy in an adaptive programmed control mode. A list of 17 references is provided. (Author/CHC)

**ED189169 TM800346

Times-to-Criterion: An Appropriate Outcome Variable for ATI Studies?

McCombs, Barbara L.; Dobrovolny, Jacqueline L.

Apr 1980 46p.; Paper presented at the Annual Meeting of the American Educational Research Association (64th, Boston, MA, April 7-11, 1980).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

In the area of aptitude-treatment interaction (ATI) research, an outcome variable which has received relatively little attention is differential student learning times, or students' relative learning efficiency on one treatment as opposed to another. Although it has been argued that learning times are not appropriate variables for evaluating treatment effectiveness, the case may be made that (a) learning times are appropriate ATI outcome variables to examine in the increasing number of self-paced, criterion-referenced, and computer-based instructional environments; and (b) the study of differential learning time outcomes from treatments implemented in these self-paced environments can help advance our understanding of treatment component/learning strategy matches that contribute to increased learning efficiency. To determine the validity of this claim, generalizations from a number of ATI studies conducted in the context of the Air Force Advanced Instructional System are discussed. (Author/GSK)

**ED200777 CE028566

Transitioning Learning Strategies Research into Practice: Focus on the Student in Technical Training.

McCombs, Barbara L.

Apr 1981 31p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April 1981). For a related document see CE 028 567.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A four-year research program was conducted on the application of learning strategies in the context of computer-based military training. It entailed an effort to define student learning strategies and skill training needs, evaluation of instructional procedures, and development of training products. Learning strategies and skill maintenance strategies likely to have the most payoff in military technical training were identified. This was done by means of an analysis of student test scores and attrition rates, a literature review, and student interviews. Methodologies appropriate for identifying the segments of the student population most in need of specific types of skill training were determined. This was done through analysis of relevant literature, discussions with students and instructors, and analysis of available empirical data. Appropriate evaluation criteria and research designs to apply in an instructional context where practical benefits are judged in terms of increased student efficiency were developed. These included measuring changes in skills, behaviors, attitudes, and course performance. Assumptions about the generalizability of these research findings were made. (A related report focusing on the role of the technical training instructor as a learning strategies expert is available separately through ERIC—see note.) (MN)

**ED201318 IR009284

Implementation and Operation of Computer-Based Education. MTC Report No. 25. Final Report.

Misselt, A. Lynn; And Others

Illinois Univ., Urbana. Computer-Based Education Research Lab.

1980 48p.

Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); EVALUATIVE REPORT (142)

A 5-year longitudinal study of factors affecting the implementation and operation of computer based education (CBE) projects in military settings using the PLATO system identified five major factors: project planning, staff selection and retention, lesson development, implementation and site management, and results and final evaluations. Findings discussed in this administrative overview of the study include: (1) it is important to clarify goals and assumptions in the planning phase of a CBE project, in addition to listing the tasks for which staff skills should be acquired, stating a plan for implementation and delivery of courseware, and providing for the final evaluation and follow-up activity; (2) staff selection and retention are often the critical features of a CBE project, outweighing hardware and software in terms of what is potentially and actually achieved; (3) several myths exist about CBE lesson development, including one which says that an author can improvise lessons; and (4) the probability of survival of CBE projects seems to be related more to their reason for establishment than to the quality and quantity of their work. An annotated list of the 24 detailed reports which form the basis for the administrative overview of the study is appended. (LLS)

**ED211116 IR009949

An Experimental System for Research on Dynamic Skills Training. Interim Technical Report, February 1980-September 1981.

Munro, Allen; And Others

University of Southern California, Los Angeles. Behavioral Technology Labs.

Sep 1981 48p.

Sponsoring Agency: Office of Naval Research, Washington, D.C. Psychological Sciences Div.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

A research project was conducted to determine if dynamic skill training differs in important ways from knowledge system instruction. The term dynamic skills was used to mean sets of intellectual processes responsible for selective perceptions in a real time driven content and for the selection and performance of appropriate responses in that context; knowledge systems was used to mean sets of related facts that are commonly taught as a body of coherent subject matter. The research was conducted on a microcomputer-based experimental simulation training system. Experimental subjects were taught to perform a simulation task based on the job of an air intercept controller. The training program permitted controlled differences in instructional treatment for different groups of students in order to explore empirical issues in dynamic skill training. The results of the research show that dynamic skill training differs in important ways from knowledge system instruction; e.g., the demands placed upon students' cognitive processing resources are different in the two types of learning. Ten references are listed. (Author/LLS)

ED171324 IR007378

Adaptive Design Strategies for Selecting Number and Presentation Order of Examples in Coordinate Concept Acquisition.

Park, Ok-Choon; Tennyson, Robert D.

Apr 1979 29p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 1979)

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

A total of 132 volunteer 10th and 11th grade students participated in an experiment to investigate two variables of computer-based adaptive instructional strategies for concept learning. The first variable tested the hypothesis that selection of number of examples according to on-task information is more efficient than selection according to pre-task information or pre-task plus on-task information. Data analysis showed that the on-task information condition needed significantly less instructional time and fewer instructional examples than either of the other two conditions. The second variable contrasted response-sensitive strategy with a response-insensitive strategy to determine the presentation order of examples within rational sets. Results showed that students in the response-sensitive group not only performed better but also needed less on-task learning time and fewer examples than the response-insensitive group. (Author/CMV)

ED131867 IR004252

The Effects of Interactive Graphics Analogies on Recall of Concepts in Science. Technical Report No. 79, 1 January 1976- 1 December 1976.

Rigney, Joseph W.; Lutz, Kathy A.

University of Southern California, Los Angeles. Behavioral Technology Labs.

Aug 1976 66p.

Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: RESEARCH REPORT (143)

To study the effects of learner generated imagery on the learning of science material a series of three experiments were conducted. Interactive graphics using the plasma panel, a touch panel interface of the PLATO system, were used to simulate the topography and functions of a battery to teach elementary concepts in electrochemistry. Following a period of initial instruction, subjects either used the plasma panel to reconstruct their image of the battery, received verbal descriptions of the topography and functions to guide the creation of mental images of the battery's topography and functions, or played checkers. Interactive graphics were rated by students as the more interesting way to present information in science. When corrected for the effects of prior knowledge, mean scores on content tests were significantly higher for the interactive graphics group. The graphics were most effective during initial acquisition. Requiring students to reconstruct the graphic simulations after the initial lesson contributed less to verbal posttest performance. (KB)

**ED207555 IR009667

Optimization of Computerized Drills: An Instructional Approach.

Siegel, Martin A.; DiBello, Louis V.

Illinois Univ., Urbana. Computer-Based Education Research Lab.

Apr 1980 39p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 1980).

Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

This report describes a computer drill called the Corrective Feedback Paradigm (CFP) and summarizes a research study which examines the effects of the CFP on posttest and time to mastery achievement. The CFP, which embodies the use of such principles as mastery learning, increasing ratio review, and discrimination training, is capable of being implemented on any computer-assisted instruction system, including micro-based systems. In this analysis of the program, 120 college seniors were required to learn 20 English-Japanese transliterated word pairs. Treatment groups were then examined according to the type of corrective feedback given, and the type of training and review procedures used. Results indicated that increasing numbers of ratio review techniques should be employed in computer drills, and that discrimination training should be provided after error feedback. Examples of CFP drills on reading comprehension and constitutional history are included, as well as recommendations for the future design of optimized drill paradigms. (MER)

ED145836 IR005277

The Effects of Pre- and Postquestions on Learning from Textual Material in a CAI Format. Technical Report No. 4.

Sinnott, Loraine T.; Alderman, Donald L.
Educational Testing Service, Princeton, N.J.
Jan 1977 53p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

This report concerns the effects of prequestion and postquestion formats in prose learning in computer-assisted instruction. Five experimental groups studied a set of eight passages under different prequestion-postquestion combinations. Twenty-five subjects, volunteers with high school degrees, were randomly assigned to each group. A final retention test had 32 items classified along two dimensions: one dependant on whether the inserted text questions prompted attention to the item, and the other dependant on whether the item required factual or inferential learning. The CAI format facilitated control over exposure to questions and passages, as well as data collection on performance measures like referral to passages, time spent on inserted questions, total study time, and scores on postquestion sets. A combination of prequestions and postquestions led to a 20% increase in student study time relative to the use of either question format alone, but did not facilitate relevant retention beyond the facilitation found with just prequestions or just postquestions. The use of prequestions interfered with incidental learning. While equal to the prequestions format in study time and effect on relevant learning, the postquestions format seemed preferable since it was not accompanied by depressed incidental learning. (Author)

ED160635 TM007718

Immediate vs. Delayed Feedback in a Computer-Managed Test: Effects on Long-Term Retention. Technical Report, March 1976-August 1976.

Sturges, Persis T.
California State Univ., Chico.
Mar 1978 38p.
Sponsoring Agency: Navy Personnel Research and Development Center, San Diego, Calif.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

This experiment was designed to test the effect of immediate and delayed feedback on retention of learning in an educational situation. Four groups of college undergraduates took a multiple-choice computer-managed test. Three of these groups received informative feedback (the entire item with the correct answer identified) either: (1) immediately item-by-item (2-second delay); (2) following the entire test (20-minute delay); or (3) 24 hours later (24-hour delay). The fourth (control) group received no feedback. Scores on a criterion test, given 1 to 3 weeks later, showed that retention was significantly better for the two delayed feedback groups (20-minute and 24-hour delay) than for the immediate feedback group (2-second delay). These results confirmed previous findings of laboratory experiments--that retention following delayed feedback is not degraded by the delay. (Author/CTM)

**ED201320 IR009292

Attitude and Performance of Military Students and Instructor Attitude in Computer-Based Technical Training. MTC Report No. 23.

Tatsuoka, Kikumi K., Ed.; Misselt, A. Lynn, Ed.
Illinois Univ., Urbana. Computer-Based Education Research Lab.
Jan 1978 54p.
Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.
Available from: University of Illinois, Computer-Based Education Research Laboratory, Urbana, IL 61801 ($2.70). EDRS Price - MF01/PC03 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

This phase of a study designed to assess the effectiveness of the PLATO IV system in a military training environment focuses on student and instructor attitudes in four special purpose vehicle repairman courses and the relationship of these attitudes to achievement. A set of PLATO lessons was developed to form a 6-week segment of the course. Achievement and attitude data were collected over a 9-month period under three treatment conditions: (1) instruction with the PLATO-Based Training System (PB); (2) a combination of PLATO and traditional instruction (CP); and (3) conventional instruction only. Attitude questionnaires were administered to the students in all three groups at regular intervals, and the instructors were also given a questionnaire. Findings showed that attitudes of both PB and CP students toward the program were consistently favorable and stable, while the attitudes of the NP group fluctuated. Factor analysis showed that a positive perception of effectiveness was associated with better achievement, but frustration and stress of learning led to less favorable results, and some revisions in the lesson structure are suggested. References, the attitude questionnaire, and a separate report on the instructor attitude survey are attached. (CHC)

**ED195246 IR008992

Advisement and Management Strategies as Design Variables in Computer-Assisted Instruction.

Tennyson, Robert D.

Apr 1980 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 1980).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

This study tested the hypothesis that high school students can effectively manage their learning needs in a computer-assisted instructional system when provided on-task advisement of their learning achievement in relation to a given criterion. One hundred and thirty-nine male and female high school students from a 12th grade course in psychology were assigned randomly to one of four treatment conditions. The two independent variables of management strategy (adaptive control and learner control) and advisement (with and without) were tested with a pretest-posttest, two-way factorial design that involved the four treatment groups. Advisement information was provided to the students using the Minnesota Adaptive Instruction System. Data analysis indicated that advisement, using either a program control or learner control management strategy, resulted in better posttest performance, less instructional time, and fewer instructional examples than those same management strategies with no advisement. (Author/MER)

**ED189134 TM800304

Instructional Control Strategies and Content Structure as Design Variables in Concept Acquisition Using Computer-Based Instruction.

Tennyson, Robert D.

Apr 1980 24p.; Paper presented at the Annual Meeting of the American Educational Research Association (64th, Boston, MA, April 7-11, 1980).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

Two instructional design variables directly related to concept learning were investigated. The first variable, management strategy, tested the hypothesis that advising students of their learning need in relationship to acquisition of a task at a given criterion would be more effective than either adaptive control or learner control strategies. Data analysis showed that for college students, the advisement condition resulted in better performance than the learner control and needed less instructional time and fewer instructional instances than the adaptive control. The second variable contrasted two forms of content structure used in learning coordinate concepts: simultaneous and successive. Students given concepts simultaneously performed better on the posttest and needed less instruction than those who received concepts successively. (Author/CTM)

ED183130 IR008026

Effects of Alternative Response Mode Requirements on the Acccuracy of Student Response in Computer-Based Testing. Report Series 1979.

Thomas, David B.

Iowa Univ., Iowa City. Computer Center.

1979 8p.

Available from: CAI Laboratory, University of Iowa, Weeg Computing Center, Iowa City, IA 52242

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

This study was designed to determine the accuracy with which a student in a computer-based testing situation will be able to accurately communicate the selected answer to the computer. Such a test was administered to 34 students, with the answer to each item supplied. Examinees, who were identified as touch typists or non-typists, used either the numbers 1 through 5 or the letters A through E as possible answers. Test scores were significantly higher for examinees taking the test under the letter condition, and typists in this group completed the task more quickly; the non-typists worked faster under the number condition. An inspection of the errors revealed that adjacent and blank key errors occurred more frequently for the number condition and for nontypists. The limitations of this study which affect the generalizability of the findings are discussed, and it is recommended that the study be replicated with more realistic looking items and a more balanced sample. (Author/JEG)

**ED209229 SP019084

An Adaptive Evaluation Structure for Computer-Based Instruction.

Welsh, William A.

Oct 1981 27p.; Paper presented at the Annual Conference of the International Congress for Individualized Instruction (13th, Tucson, AZ, October 28-30, 1981).

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

Adaptive Evaluation Structure (AES) is a set of linked computer programs designed to increase the effectiveness of interactive computer-assisted instruction at the college level. The package has four major features, the first of which is based on a prior cognitive inventory and on the accuracy and pace of student responses. AES adjusts materials presented to the student by using a branching process through a three-dimensional matrix of instructional blocks for each of four learning tasks. There are three levels of difficulty for each of the three dimensions--task complexity, degree of abstraction, and the extent of comparative analysis required. A second feature is that AES maps the path taken by each student through each task, records the time required as well as the number and matrix location of each appropriate and inappropriate response. Another feature of AES is that other student performance indicators can be stored for comparison with AES performance. A fourth feature is AES's ability to generate statistics on aggregate class use of and performance on each block. AES has been implemented with an instructional package called Comparative Study of Political Elites (COMPELITE), but is designed to be generalizable. It is written in BASIC V for PRIME minicomputers, and has been tested in one undergraduate political science course at the University of Iowa. (Author/FG)

**ED201531 SE034938

Learner Control of Number of Instances in a Rule-Using Task.

Wilcox, Wayne C.; And Others

Jun 1978 25p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

Seventy-nine college students were taught laws of logarithms via the TICCIT CAI system. Most of the students were assigned to learner control or yoked treatment groups. Students assigned to learner control groups were able to choose how many instances to study. Students assigned to yoked groups were randomly yoked to students in the learner control groups in such a way that each student in the yoked groups was required to study the same number of instances for the same amount of time as studied by his or her companion in the learner control groups. No differences in posttest performance and attitude toward the instruction occurred between the learner control and yoked groups. Thus, no evidence was provided that learner control of number of instances will accommodate individual differences in learning a rule-using task. (Author)

Basic Research: Problem Solving

**ED192736 IR008801

An Annotated Selective Bibliography on Human Performance in Fault Diagnosis Tasks. Technical Report 435. Final Report.

Johnson, William B.; And Others

Illinois Univ., Urbana. Coordinated Science Lab.

Jan 1980 53p.; For related document, see IR 008 809.

Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: BIBLIOGRAPHY (131)

This annotated bibliography developed in connection with an ongoing investigation of the use of computer simulations for fault diagnosis training cites 61 published works taken predominantly from the disciplines of engineering, psychology, and education. A review of the existing literature included computer searches of the past ten years of Psychological Abstracts and ERIC documents through mid-1978, and manual searches using references from reports, the University of Illinois library card catalog, and the solicitation of references from experts in the field. Some references dating from the early fifties are included. The materials are divided into three major areas: (1) research reports, primary and secondary; (2) manuals for fault diagnosis; and (3) materials indirectly related to fault diagnosis. Author and subject indexes are provided. (Author/MER)

**ED200449 SE034603

Early Adolescent Use of Selected Problem-Solving Skills Using Microcomputers.

Cox, Dorothy Anna Howard

1980 264p.; Ph.D. Dissertation, The University of Michigan.

EDRS Price - MF01/PC11 Plus Postage.

Document Type: DISSERTATION (041); RESEARCH REPORT (143)

This study examined two major areas: (1) evaluation of the characteristics, interactions, problem-solving strategies and achievement of seventh-and eighth-grade junior high school students (N=66) as they interacted with a microcomputer in three problem-solving sessions, and (2) determination of the effectiveness of three original microcomputer programs using topics from life science, social studies and environmental science in problem-solving, and a fourth program in specific skill training in organizing data using a matrix. Selected conclusions indicated that: (1) students can improve in problem-solving skills in a short time on a microcomputer; (2) the training session in organizing data into a matrix was successful in introducing a usable new strategy; (3) individuals worked better in teams than alone; (4) subjects were just as motivated when sessions were more infrequent; (5) influence of group interaction enabled subjects of all abilities to successfully participate in and solve problems; (6) all subjects adapted easily and quickly to the use of a microcomputer; (7) subject interest remained high regardless of achievement or variances of individual characteristics; and (8) microcomputers can be considered a viable, motivating aid for the development of some problem-solving skills of early adolescents. (Author/JN)

**ED219235 SE038286

Teaching Problem Solving; the Effect of Algorithmic and Heuristic Problem Solving Training in Relation to Task Complexity and Relevant Aptitudes.

de Leeuw, L.

Free Univ., Amsterdam (Netherlands).

1982 16p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143)

Sixty-four fifth and sixth-grade pupils were taught number series extrapolation by either an algorithm, fully prescribed problem-solving method or a heuristic, less prescribed method. The trained problems were within categories of two degrees of complexity. There were 16 subjects in each cell of the 2 by 2 design used. Aptitude Treatment Interaction (ATI) was an object of the research, with short-and long-term instructional effects investigated. Training was given by computer-assisted instruction. Results revealed an over-all superiority of the algorithm programs for both training levels. An ATI was shown between Numerical Ability and the treatment factor only for the less complex problem category. A reverse relation holds for Negative Fear of Failure and treatment, significant in only the more complex problem category. Results of testing done some days after the training session showed opposite overall effects. No ATI's were found here. Further, Field Dependency appeared to be a good predictor of the susceptibility for set fixedness to the trained problem-solving method. (MP)

**ED192743 IR008809

Human Decision-Making in Computer-Aided Fault Diagnosis. Technical Report 434. Final Report.

Rouse, William B.; And Others

Illinois Univ., Urbana. Coordinated Science Lab.

Jan 1980 29p.; For related document, see IR 008 801.

Sponsoring Agency: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: EVALUATIVE REPORT (142)

A series of six experiments was conducted to increase understanding of human performance on diagnostic tasks, and in the process to investigate the feasibility of using context-free computer-based simulations to train troubleshooting skills. Three simulated diagnostic tasks were developed: a simple context-free task, a complex context-free task, and a context-specific task (simulation of aircraft powerplants). The six studies evaluated the effects of computer aiding on the performance of each task and on subsequent unaided performance, using different task mixes, subjects (4 to 48 engineering or technical trainees), and conditions (self-pacing vs. forced pacing, feedback loops). Computer aiding reduced the number of tests required to diagnose simple problems and enhanced subsequent unaided performance except when subjects were under time pressures. Training on the simple task with computer aiding first inhibited and then enhanced performance on the complex context-free task. Training on the context-free tasks improved performance on the context-specific task. Results provide a database for both theoretical issues in fault diagnosis and practical application of computer aiding to live system performance. (Author)

**ED202455 IR009301

Using PLATO To Teach Problem Solving.

Steinberg, Esther R.
Illinois Univ., Urbana. Computer-Based Education Research Lab.
Aug 1980 65p.
Sponsoring Agency: National Inst. of Child Health and Human Development (NIH), Bethesda, Md.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

This report describes the results of three studies which investigated the use of PLATO to teach problem solving. Subjects were 244 children from kindergarten through third grade. The first study explored the extent to which kindergartners and second graders used the knowledge about which answers were right and which were wrong to develop the correct strategy to solve a novel picture problem. The next study looked at the procedures used by kindergartners and second graders while they were in the process of trying to get the answer. The third study considered three conditions of teaching first and third graders the necessary problem solving skills: experience only, feedback consisting of a visual record of the student's work on the first five problems, and interactive instructional feedback on how to solve each problem that the child had done wrong. Abstracts, methods, results, and discussions are given for each of the studies. Results of this research led to a post hoc study which is described. Seven figures show sample displays and nine references are also given. (CHC)

Basic Research: Computer Managed Instruction

**ED190659 TM800456

Project IMPACT: A Computer Based Instructional Management Information System.

Adams, Charles F.; And Others
Apr 1980 54p.; Symposium presented at the Annual Meeting of the American Educational Research Association (64th, Boston, MA, April 7-11, 1980).
EDRS Price - MF01/PC03 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

IMPACT is a computer-based information system designed to help school districts share materials and expertise and to implement state-mandated evaluation of student achievement. It is designed to meet local, regional, and state evaluation and reporting requirements. Based upon the diagnostic-prescriptive approach to instruction, it consists of: (1) a master curriculum file containing thousands of instructional objectives, test items, and teaching activities for reading, mathematics and special education; (2) a computer program for scoring and interpreting standardized norm-referenced tests; (3) a computer program for scoring and interpreting locally developed criterion referenced tests; and (4) a student achievement history file for recording scores, objectives mastered, prescriptions assigned, and demographic data. The master curriculum file and criterion-referenced scoring program were pilot tested at six grade levels. Although teachers developed over 1,200 reading activities for the curriculum file, they used only 30% in the pilot classrooms. After six months, students in the pilot project mastered 69% of the activities, 1% below the predetermined level. Teachers were pleased with the quick turnaround time for scoring. (Frank Ambrosie, James Craner, Steve Kidder, and Charles Adams contributed the four papers in this symposium.) (CP)

**ED191511 JC800153

RSVP: Feedback Program for Individualized Analysis of Writing. Research Report.

Anandam, Kamala; And Others
(See Content Area Applications: English Composition and Literature)

**ED196425 IR009033

Shipboard Instruction and Training Management with Computer Technology: A Pilot Application.

Dollard, John A.; And Others Navy Personnel Research and Development Center, San Diego, Calif.
Sep 1980 54p.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

To determine if computer technology could improve shipboard instruction and training, an Automated Shipboard Instruction and Management System (ASIMS) was used for computer managed instruction (CMI) about the USS GRIDLEY during 1975-76. ASIMS comprised a NOVA 1200 minicomputer with support peripherals, a Computer Integrated Instruction (CII) system in General Damage Control (GDC), and a Shipboard Training Administration System (STAS). CII GDC provided offline instruction integrated with online computer testing, diagnostics, and prescriptives. STAS provided a generalized File Management and Information Retrieval System (FMS) that facilitated control of shipboard files, records, and reports. Posttest scores indicated that graduates of the CMI course significantly outperformed groups trained under conventional shipboard methods. Results also showed that CMI is technically and operationally feasible aboard ship, and commercial, off-the-shelf minicomputer systems can support both a CMI capability and limited nontactical ADP functions. A cost-effectiveness study was beyond the scope of the project. Project and technical supports are listed, as are references. (Author/LLS)

**ED194833 CG014774

Student Attrition in a Computer-Managed Course and Cognitive Attributes. Summary.

Federico, Pat-Anthony; Landis, David B.

1980 14p.; Paper presented at the Annual Convention of the American Psychological Association (88th, Montreal, Quebec, Canada, September 1-5, 1980).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

The incorporation of computer-managed instruction into an academic program made it necessary to identify those cognitive styles, abilities, and aptitudes which were relevant to the success or failure of trainees in the Navy's Basic Electricity and Electronics (BE/E) School in order to minimize the attrition rate. Measures of 6 styles, 6 abilities, and 12 aptitudes were administered to 172 BE/E trainee graduates and 35 BE/E failures. Stepwise discriminant analyses were computed to determine what linear combinations of tests optimally differentiate between BE/E graduates and failures. Classification equations and predictive accuracies were established for each derived discriminant function as a means of evaluating its adequacy. Results indicated that failures and graduates of BE/E School significantly differed in certain cognitive styles, abilities, and aptitudes. Failures as contrasted with graduates possessed: (1) field-dependent and broad conceptualizing styles; (2) poor verbal comprehension, ideational fluency, general reasoning capacity, and inductive ability; and (3) low quantitative, technical, verbal, and general aptitude. (Author)

**ED202469 IR009343

Computer-Managed Instruction in the Navy: III. Automated Performance Testing in the Radioman "A" School.

Hamovitch, Marc; Van Matre, Nick

Navy Personnel Research and Development Center, San Diego, Calif.

Mar 1981 25p.; For related documents, see IR 009 260, IR 009 334, and ED 196 411.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: EVALUATIVE REPORT (142); RESEARCH REPORT (143)

The third in a series on Navy Computer Managed Instruction (CMI), this report describes how the automated scoring of teletypewriting tests affects training in a system for automated performance testing (APT) which was implemented in the teletypewriter (TTY) portion of the Radioman "A" School in San Diego. The system includes a computer-generated Error Distribution Report (EDR) which provides detailed feedback on student typing errors. The objectives of this study were to determine whether test-related activities take less time under APT than under manual testing conditions, and to determine whether training time can be reduced by different applications of EDR use. Two experiments were conducted to investigate the time required to perform test-related activities under manual scoring as compared to those performed under automated testing conditions. Results indicated that testing under the APT procedures was faster than manual testing and grading, and that a majority of students favored the CMI system in general, and the APT program in particular. Fourteen references are listed. (MER)

**ED190126 IR008618

Computer-Managed Instruction: Individualizing Introductory Psychology for 1,000 Students.

Kasschau, Richard A.; Halpern, Michael S.

Sep 1979 12p.; Paper presented at the American Psychological Association Meeting (New York, NY, September 1979).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This paper details a computer managed program of instruction called Teaching Information Processing System (TIPS) as adapted to an introductory psychology course. TIPS encourages the instructor to formulate objectives for meaningful units of a course--objectives which should imply what changes in student behavior indicate mastery. Then multiple choice questions are written to assess student course mastery. The TIPS program uses each student's performance to generate a uniquely catered prescription detailing where performance is above, at, or below standard and what actions the student is advised to take. Early work developing the program is reviewed as well as student ratings of TIPS, comparison of TIPS and non-TIPS classes, selected samples of TIPS objectives, and quiz questions. Evidence is presented indicating that TIPS seems neither to help nor hinder the "below-C" students, but those less well off students are more satisfied with their education in a TIPS course. They drop the course with more precise reasons related to course content, and show a greater likelihood of re-enrolling in the course in a subsequent semester than students who withdraw from a non-TIPS section. (Author/RAA)

**ED186464 TM800167

Integrated System Test of the Advanced Instructional System (AIS). Final Report.
Lintz, Larry M.; And Others
McDonnell Douglas Astronautics Co. - East, St. Louis, Mo.
Dec 1979 108p.; Not available in paper copy due to marginal legibility.
Sponsoring Agency: Air Force Human Resources Lab., Lowry AFB, Colo.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: RESEARCH REPORT (143)

The integrated system test for the Advanced Instructional System (AIS) was designed to provide quantitative information regarding training time reductions resulting from certain computer managed instruction features. The reliabilities of these features and of support systems were also investigated. Basic computer managed instruction reduced training time from that required for conventional instruction by 24 to 35 percent. Student progress management and individualized instructional assignment provided further time savings. Reliability and maintainability data collected during the integrated system test indicated that the support functions, the media devices and courseware, and the computer hardware and software met or exceeded requirements. The lessons learned during course development were extrapolated to provide estimates of courseware development times that should be realizable in converting conventional group instruction to computer based instruction. (Author/CTM)

**ED204355 TM810324

Program Analysis and Monitoring (PAM) Techniques for Improving Title I Evaluation Locally.
Kidder, Steven J.; Hayford, Paul D.
Apr 1981 52p.; Paper presented at the Annual Meeting of the American Educational Research Association (65th, Los Angeles, CA, April 13-17, 1981). Best copy available.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: CONFERENCE PAPER (150); EVALUATIVE REPORT (142); PROJECT DESCRIPTION (141)

If school principals are to exercise adequate management control over their educational programs, they must have effective management tools. Title I Program Analysis and Monitoring (PAM) is such a management tool. Title I PAM is useful, timely, and efficient--in the sense of minimum interference with the educational program and modest cost. The Title I PAM system in reading comprises Achievement Monitors for the measurement of reading comprehension; Monitor Reports on teachers' reading classes or instructional groups; Program Analysis Reports (PAR); questionnaires for the collection of process information; and computer programs for test scoring and report generation. PAR (i.e.,: grade-level reports for the principal) are the heart of PAM and relate pupil achievement to the distribution and use of classroom resources. If pupil achievement is substandard, then the principal has a legitimate need to intervene at the level of the classroom teacher. If pupil achievement is satisfactory, but resource utilization is more than, or less than, expected, the principal will want to confer with the teacher. In Title I PAM there are three variations on the PAR. Descriptions and illustrations of each type are appended. (RL)

**ED201306 IR009190

Using Computers to Manage PSI Sociology.
Olsen, Henry D.
Aug 1980 10p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)

Computer managed instruction (CMI) is proposed as a solution to the managerial problems created when introductory level courses with large numbers of students are taught using a self-paced, mastery-learning approach, e.g., Keller's Personalized System of Instruction (PSI). This paper discusses the educational premises of CMI, the advantages of CMI for both the instructor and the learner, and the system sequence for introductory sociology courses, including course and student registration; production, administration, and scoring of tests; and reports to instructors on student performance and test responses Suggested guidelines for adapting an introductory sociology course to CMI address the definition of objectives, building test questions, structuring a balanced test, question construction, writing prescriptions, designing to specifications, and testing the test. (CHC)

**ED212290 IR009998

Computer-Managed Instruction in Navy Technical Training: An Attitudinal Survey. Final Report. (June 1980-March 1981).

Robinson, Carol Ann; And Others
Navy Personnel Research and Development Center, San Diego, Calif.
Dec 1981 50p.; Appendix will not reproduce due to density of type in original document.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160)

Designed to investigate the existing attitudes of students and instructors toward the computer managed instruction (CMI) learning environment, this research project also identified factors relating to these attitudes. Questionnaires were developed and administered to 100 instructors and 255 trainees from five schools taught under the CMI system. In general, trainee and instructor questionnaires contained items exploring attitudes toward the CMI system in the learning environment, demographics, interactions with instructors or students, and motivations. Response data were analyzed using descriptive and inferential statistics. Results of the study indicated that trainees' attitudes toward the CMI system in the learning environment were generally favorable, while those of instructors were generally not favorable. The study also revealed that trainees' length of service with the Navy appears to be related to attitudes toward the CMI system in the learning environment: the longer the trainee is in the service, the more negative the individual tends to be toward the system. Copies of the student and instructor questionnaires are appended and 13 references are listed. (Author/LLS)

**ED216899 SE037876

College Student Attitude toward Computer-Managed Instruction in an Introductory Biology Course.

Steffenson, Martin B.; And Others
May 1982 74p.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

The purpose of this study was to determine the attitudes of students toward a computer managed instruction (CMI) biology course module and to check the internal consistency of the item banks on the test instrument. CMI as used in this study refers to the use of a computer to assist the instructor with routine management tasks in teaching such as testing, guidance, record keeping, and providing feedback to students. Specific areas addressed included whether: (1) students' attitudes toward CMI improved as a result of the experience; (2) students felt positive or negative about specific affective and operational aspects of CMI; and (3) improvements should be made in the item bank. Attitude scales (included in appendices) were administered to participants (N=64) on a pretest/posttest basis. Findings indicate an overall positive attitude change. Use of computer terminals did not appear to make students feel that instructors lacked concern about their learning progress. Students favored immediate diagnostic feedback and opportunity to take tests at their convenience, considering CMI to be both a testing and a learning experience. Correlation coefficients on total test and subscale internal consistency are reported with suggestions for improving the instruments. (Author/JN)

**ED196411 IR008994

Computer-Managed Instruction in the Navy: I. Research Background and Status.

Van Matre, Nick
Navy Personnel Research and Development Center, San Diego, Calif.
Sep 1980 19p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142); RESEARCH REPORT (143)

This report describes a computer managed instruction (CMI) system operated by the Navy which involves approximately 9,000 students a day in ten technical training schools, and the research and development effort that has taken place to ensure the most cost-effective and productive technical training system. Major system problems were identified and suitable research proposals were developed through a four-phase effort: (1) identification of system problems through observation, questionnaires, and interviews with CMI management, instruction staff, and student personnel; (2) review of other CMI systems; (3) development of candidate research and development proposals to support the major problem areas; and (4) setting R&D priorities. Initial research efforts on the six proposals given the highest priority status are described, including the effects of incentive charts on rate of progress through a CMI course, instructor role in a CMI environment, computer generated reports for the management of student learning, development and incorporation of automated performance tests into the CMI system, development of alternate test strategies to improve mastery and retention in selected CMI courses, and development of computer software to aid data summarization for research and management analysis. (CHC)

**ED200226 IR009260

Computer Managed Instruction in the Navy: II. A Comparison of Two Student/Instructor Ratios in CMI Learning Centers. Technical Report.

Van Matre, Nick; And Others
Navy Personnel Research and Development Center, San Diego, Calif.
Feb 1981 37p.; For related document, see ED 196 411.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

Students at the Basic Electricity and Electronics School in San Diego were randomly assigned to learning centers with either an 18:1 or 30:1 student/instructor (S/I) ratio to determine the effects on student achievement and instructor performance in an individualized computer-managed course. Data were collected for four months on: (1) student attrition, (2) training contact hours, (3) first-try scores on module tests and phase tests, (4) number of remediations per instructional module, and (5) the number of unsatisfactory scores on practical tests. Observational data were also collected on the frequency and duration of categories of instructor behaviors during the 6-hour computer-managed instructional shift. The larger S/I ratio (30:1) had some detrimental effects on student training time for some career patterns, and on some instructor behaviors. Instructors in the larger ratio condition spent more time in testing and student administration activities, and less time answering student questions on technical matters. The S/I ratio had no significant effect on the student achievement measures. Four references are listed, and appendices include data on student qualifying scores and mean module completion times for individual modules. (Author/BK)

**ED213388 IR009945

Computer-Managed Instruction in the Navy: V. The Effects of Charted Feedback on Rate of Progress Through a CMI Course.

Van Matre, N. H.; And Others
Navy Personnel Research and Development Center, San Diego, Calif.
Nov 1981 26p.; For related documents, see ED 196 411 and ED 200 226.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

Two experiments are conducted to (1) develop feedback charts that display information on cumulative progress to motivate students, (2) determine the best procedures for chart delivery, and (3) assess the feasibility of the chart procedures in operational computer managed instruction (CMI) courses. Experiment I was designed to test five types of chart conditions in one CMI course. Although no significant differences were observed between the five conditions, the best method appeared to be the condition in which students requested charts that contained indications of available incentives. Experiment II was an operational test of the best chart procedure from Experiment I in four CMI schools with varying content and management styles. The chart procedures resulted in shorter course completion times when compared with the times of control groups without charts in all four schools, and student and instructor attitudes were strongly supportive of the effectiveness of the chart procedures in each experiment. Results indicated that charted feedback of progress in a CMI course is effective for improving student progress without interfering with achievement. The appendix includes preliminary and Phase II instructions to students and a progress rate plotting guide. A bibliography of 13 items is included. (CHC)

**ED194740 CE026951

The TVOntario Academy. The Use of Television Broadcasting and Computer-Managed Learning for Individualized Adult Learning.

Waniewicz, Ignacy
Ontario Educational Communications Authority, Toronto.
1980 11p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

In January 1980, TVOntario, a television network operated by the Ontario Educational Communications Authority, introduced a new concept in adult learning, the TVOntario Academy. It consists of a combination of high broadcast-quality television programming, a computer-managed learning (CML) system, and especially designed courseware aimed at enabling TVOntario viewers the opportunity of embarking upon self-directed learning projects on subjects related to the television series. The basic component of a TVOntario Academy is a carefully selected, or especially produced, series of television programs which covers a well-defined and clearly circumscribable body of knowledge. The first two projects were a Health and the Environment Academy and a Music of Man Academy; Parents' Academy will be offered in January 1981. Resources and support materials usually consist of a learners' guide, reading materials, multiple-choice questions, CML system, and newsletters. Findings of an evaluation of the two academies presented provided information about motivations of participants. Appeal and convenience of a television-based learning activity were cited. (YLB)

Basic Research: Computer Assisted Testing

**ED209336 TM810879

An Adaptive Testing Strategy for Mastery Decisions. Research Report 79-5.
Kingsbury, G. Gage; Weiss, David J.
Minnesota Univ., Minneapolis. Dept. of Psychology.
Sep 1979 49p.
Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

The theory and technology of item characteristic curve (ICC) response theory and adaptive testing were applied to judging individuals' competencies against a prespecified mastery level to determine whether each individual is a "master" or "nonmaster" of a specified content domain. Items from two conventionally administered mastery tests administered in a military training environment were calibrated using the unidimensional three-parameter logistic ICC model. Using response data from the conventional Administration of the tests, a computerized adaptive mastery testing (AMT) strategy was applied in a real-data simulation. The AMT procedure used ICC theory to transform the traditional arbitrary "proportion correct" mastery level to the ICC achievement metric in order to allow adaptation of the test to each trainee's achievement level estimate, which was calculated after each item response. A mastery decision was made for the trainee after the 95 percent Bayesian confidence interval around his achievement level estimate failed to contain the prespecified mastery level. The AMT procedure reduced the average test length over all circumstances examined, while reaching the same decision as the conventional procedure for 96 percent of the trainees. Advantages and possible applications of AMT procedures in certain classroom situations are noted and discussed. (Author/DWH)

**ED202462 IR009334

Computer-Managed Instruction in the Navy: IV. The Effects of Test Item Format on Learning and Knowledge Retention.
Lockhart, Kathleen A.; And Others
Navy Personnel Research and Development Center, San Diego, Calif.
Mar 1981 33p.; For related documents, see IR 008 994 and IR 009 260.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

The relative effectiveness of multiple-choice (MC) and constructed-response (CR) test formats in computer-managed instruction (CMI) were compared using four test groups of 30 trainees each who were assigned nonsystematically from the basics course at the Propulsion Engineering School, Great Lakes Naval Training Center. Group A took module tests in the standard CR format with answer cues and then converted their answers to MC answer sheets for CMI scoring. Group B took CR tests with answer cues, but the research staff converted the answers. Group C took CR tests but without answer cues, and the staff converted the answers, while Group D took tests in the MC format. Before and after the tests, skills and knowledge were measured to compare factors such as learning, retention, time to complete the course, and attitudes. There were no differences in learning among the groups, but Group C, with the CR questions without cues, had the best retention, but took longer to complete the course and rated their tests as being more difficult than did students in the other groups. The attitude questionnaire and the results of ANOVAs comparing the groups on measures of learning are appended, and five references are provided. (Author/BK)

**ED186471 TM800176

Operational Characteristics of a One-Parameter Tailored Testing Procedure. Research Report 79-2.

Patience, Wayne M.; Reckase, Mark D.

Missouri Univ., Columbia. Tailored Testing Research Lab.

Oct 1979 39p.

Sponsoring Agency: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

An experiment was performed with computer-generated data to investigate some of the operational characteristics of tailored testing as they are related to various provisions of the computer program and item pool. With respect to the computer program, two characteristics were varied: the size of the step of increase or decrease in item difficulty for successive items, and the range in difficulty levels within which items might be considered acceptably close to a specified level. With respect to item pools, the two characteristics were varied: the number of items in the pool, and the shape of the item difficulty distribution. Simulated test data were generated by computer for various values of the four parameters (step size, acceptance range, number of items, and item difficulty distribution) and for various hypothetical ability levels from plus three to minus three. The resulting expected values and standard errors were tabulated and are presented as a guide for those involved in setting up tailored testing procedures. (Author/CTM)

**ED187746 TM800248

Algorithms for Developing Test Questions from Sentences in Instructional Materials: An Extension of an Earlier Study.

Roid, Gale H.; And Others

Oregon State System of Higher Education, Monmouth.

Jan 1980 28p.; For related document, see ED 163 024.

Sponsoring Agency: Advanced Research Projects Agency (DOD), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143)

An earlier study was extended and replicated to examine the feasibility of generating multiple-choice test questions by transforming sentences from prose instructional material. In the first study, a computer-based algorithm was used to analyze prose subject matter and to identify high-information words. Sentences containing selected words were then transformed into multiple-choice items by four writers who generated foils or question alternatives informally and by an algorithmic method. These items were then organized into tests and administered to 24 college students before and after they had studied the instructional materials. In this replication, the tests were administered to 249 high school students, and results were combined with those obtained earlier. This provided stable estimates of item difficulty. Results supported those obtained earlier. Thus, it appears that this item-writing technique is feasible and that algorithmic methods of generating foils produce items of reasonably good quality. (The prose passage used in the study and examples of test items are appended). (Author/CTM)

Basic Research: Guidelines for Courseware Evaluation

**ED216704

Evaluating Instructional Software for the Microcomputer.

Cohen, Vicki L. Blum

Mar 1982 96p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 1982.) Best copy available.

EDRS Price - MF01/PC04 Plus Postage

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150); TEST, QUESTIONNAIRE (160)

In order to develop a systematic procedure for the evaluation and revision of educational software for microcomputers, a study was undertaken by the Educational Products Information Exchange (EPIE) Institute and the Microcomputer Resource Center at Columbia University to define the criteria that are needed to evaluate instructional microcomputer programs. A set of commercially-produced educational programs for microcomputers was selected for analysis. The software evaluation instrument developed and revised during the course of the project was adapted from the EPIE instructional materials analysis instrument. After the instrument was developed, eight analysts evaluated the instructional programs and an analytical procedure evolved which provides descriptive/prescriptive information about instructional software. A reliability study conducted during the project indicated that the accuracy of the analysts' evaluations ranged from 76 percent on the first evaluation to 96 percent on the final evaluation. Significant findings show that most commercial courseware programs on the market stress a drill and practice approach to the study of arithmetic and are oriented toward the elementary school level. It was concluded that most programs did not utilize instructional strategies which facilitate conceptual learning. One figure, five tables, a reference list, a glossary, and the evaluation instrument accompany the text. A copy of the evaluation instrument is appended. (Author/JL)

**ED205201 IR009505

Instructional Software Selection: A Guide to Instructional Microcomputer Software. Microcomputers in Education Series.

Douglas, Shirley; Neights, Gary

Pennsylvania State Dept. of Education, Harrisburg.

33p.; For a related document, see IR 009 507. Also prepared through the Colonial Northampton Intermediate Unit, PA.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055)

This guide for evaluating microcomputer instructional software includes a hardware/software interface analysis sheet which can be used to determine if the software being evaluated is compatible with the hardware on which it will be used. Also provided is an instructional software evaluation form for use in making judgments about (1) specific instructional objectives, (2) grade level, (3) validation data, (4) correlation data, (5) instructional strategies employed in the software, and (6) instructional design features. Appendices include a listing of seven computer users' groups and local computer clubs in California, Ohio, and Pennsylvania; a listing of eight computer software libraries; a short bibliography of resources; and a list of organizations concerned with computer assisted instruction. A glossary of terms dealing specifically with microcomputer software is also appended. (LLS)

**ED206330 IR009850

Evaluator's Guide for Microcomputer-Based Instructional Packages.

Northwest Regional Educational Lab., Portland, Oreg.

1981 61p.; Developed by MicroSIFT, A Project of Computer Technology Program.

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)

This guide developed by MicroSIFT, a clearinghouse for microcomputer-based educational software and courseware, provides background information and forms to aid teachers and other educators in evaluating available microcomputer courseware. The evaluation process comprises four stages: (1) sifting, which screens out those programs that are not instructional in nature and determines a package's operational readiness and hardware compatibility; (2) package description, including program format, instructional purpose and technique, type of package, available documentation, and the hardware configuration necessary for operation; (3) courseware evaluation, i.e., an assessment of the content, instructional quality, and technical quality of the package; and (4) in-depth evaluation, which is not described in this guide. Forms for the second and third phases are provided, together with explanations of the kinds of information needed and discussions of some of the factors to be considered in completing certain sections of the forms. Definitions of 15 terms are provided in the introductory section. (CHC)

**ED201485# SE034698

Guidelines for Evaluating Computerized Instructional Materials.

Heck, William P.; And Others

National Council of Teachers of Mathematics, Inc., Reston, Va.

1981 30p.

Available from: National Council of Teachers of Mathematics, 1906 Association Dr., Reston, VA 22091 ($3.75; Individual members, bookstores, or orders of 10 or more copies earn a 20% discount off list price).

Document Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)

This guide, prepared under the direction of the Instructional Affairs Committee of the National Council of Teachers of Mathematics (NCTM), is designed to serve all educators interested in the instructional applications of computers. Its development has been marked by a continuous, conscious effort to address the needs of all educators irrespective of their areas of interest, subject matter, or present level of involvement with instructional computing. The guide meets three tasks: (1) it provides information about the location, selection, and evaluation of computerized materials; (2) it reports this information in small sections; and (3) it defines five paths, called "tour groups," for using the guide that are defined in terms of the reader's instructional computing skills and goals. The sections to the guide are titled: (1) A Guide to These Guidelines; (2) What, Why, and for Whom; (3) Obtaining Software and Documentation; (4) Getting Hardnosed about Software: Guidelines for Software Review; (5) Communicating with Posterity: Guidelines for Software Documentation; (6) Asides to the Instructional Programmer; (7) Next Steps; and (8) Extra Forms. (MP)

**ED196431 IR009039

School Microware: A Directory of Educational Software. Over 500 Programs/Packages for APPLE, PET, TRS-80.

Dresden Associates, Dresden, Maine.

Sep 1980 52p.

Available from: Dresden Associates, P. O. Box 246, Dresden, ME 04342. (Subscription- $20.00/year, Directory Issue, September $14.00 plus $4.00/each update.)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: DIRECTORY (132)

This preliminary directory represents the offerings of 45 software suppliers and information about instructional software currently available for three microcomputers widely used in schools. It is geared towards a wide variety of users including school planners contemplating microcomputer acquisition, teachers planning courses and curricula, media center personnel, schools of education, and home computer users. The directory is organized as follows: (1) software descriptions in sequence by school department, subject, and lowest grade level; (2) summary listings of software for individual hardware systems, in the same sequence as the first section; (3) an alphabetical listing of software suppliers and their addresses; and (4) a glossary of terms used. Software descriptions include the program name, department, subject, grade level range, program type, and functional description, as well as intended hardware system(s), source, and retail price. The summary listing contains only the program name, grade level range, functional description, and an identification number which refers back to the more complete entry in the first section. (Author/MER)

**ED213389 IR10006

School Microware Reviews. Evaluations of Educational Software for Apple, PET, TRS-80, with Index to Evaluations in Other Publications.

Dresden Associates, Dresden, Maine.

School Microware Reviews, v1 n1 Sum 1981

1981 68p.; For related document, se ED 196 431.

Available from: Dresden Associates, P.O. Box 246, Dresden, ME 04342 ($20.00 per issue).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: BIBLIOGRAPHY (131); TEST, QUESTIONNAIRE (160); SERIAL (022)

This document describes the operation and quality of pre-college instructional software sold for use on microcomputers. It also assists in locating other sources of similar information about instructional software. This edition is limited to programs for the Apple II, Commodore PET, and Radio Shack TRS-80 Model I. Fifty reviews of software products from 21 different suppliers are listed. In addition, an index is included which provides access to 287 reviews of instructional software published over the past two years by a dozen different magazines and journals. Also described is the User Software Review Program, a cooperative program through which persons interested in evaluating software may receive free or reduced price copies of School Microware Reviews. Advice is given on selecting software for review and on submitting evaluations. A copy of the evaluation form to be used is also provided. (LLS)

Basic Research: Simulations

**ED196417 IR009021

Simulating CBE on Paper: A Small Step Backwards.

Brenner, Lisa P.

1980 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 1980).

Sponsoring Agency: National Institutes of Health (DHEW), Bethesda, Md. Bureau of Health Professions Education and Manpower Training.

EDRS Price - MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142); CONFERENCE PAPER (150)

A study was conducted in the School of Medical Technology at the University of Illinois to determine the relative learning effectiveness of lessons taught by means of computer assisted instruction (in this case, PLATO) versus lessons taught by means of paper copies adapted from the PLATO system. While the benefits of translating paper instructional materials to computer systems have been explored, little attention has been given to using the computer to generate paper instructional materials. This study included three phases: (1) the steps involved and costs of translation of computer based information to paper copy were recorded and subjected to a feasibility analysis; (2) the translated instructional modules were evaluated for lesson style, content, and appropriateness; and (3) the short and long term learning effectiveness of PLATO lessons versus their paper counterparts were compared in a controlled study. The translation process was found to be feasible and students appeared to learn as effectively with the paper versions as with online delivery. Tables of data are included. (Author/LLS)

**ED195248 IR008999

The Evolution of PLATO Instructional Simulations.
Brenner, Lisa P.; Kraatz, James
1979 22p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Changes in the design and implementation of instructional simulations on the PLATO IV system have evolved in the direction of more explanation, evaluation, and streamlined simulation. Student pressure to use their own problem solving processes, the practical system limitations of producing environmentally complex simulations, and student confusion when no guidance was given have all contributed to a change in instructional goals and new directions in the development of instructional simulations. New formats combine feedback on each action taken, guidance or explanation in reaching the goal, and less realistic simulations. Instructional goals are now emphasizing concept learning rather than skill in problem solving. Current trends indicate continued use of simple simulations with the increasing use of non-traditional formats, and the use of sound, as well as more individualization of lesson development. Thirteen references are included as well as a selected annotated listing of instructional simulations and games arranged by subject areas. (BK)

**ED201486 SE034820

Developing Conservation Attitudes and Energy Concepts in Individuals of Various Cognitive Levels, Using the Energy Environment Simulator.
Cartwright, Dennis D.; Heikkinen, Michael W.
(See Content Area Applications: Science)

**ED190118 IR008603

The Future and Educational Computer Simulation.
Cohen, Eli
California Univ., Davis. Teaching Resources Center.
Apr 1980 7p.; Paper presented at the American Educational Research Association (Boston, MA, April 1980).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)

Written for developers of classroom simulation who may wish to transfer their skills to the computer medium, this paper describes the procedures for writing and developing an educational simulation on a computer. Steps in the procedure include conceptualizing the problem to be simulated, operationalizing the variables, examining pedagogical considerations, writing the simulation manual, and simulation programming. The future for the educational simulation developer in computer simulation is also briefly discussed. References are listed. (FM)

**ED196428 IR009036

Use of a Simulation Program for Teaching Graduate Reading Diagnostic Skills.
Feldmann, Shirley; And Others
1980 25p.; Paper presented at the Northeastern Educational Research Association Convocation (Ellenville, NY, October 22-24, 1980).
EDRS Price - MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Thirty-eight college students were the subjects of a study designed to examine the efficacy of training graduate reading specialists through a diagnosis simulation program versus the use of a traditional child study approach. The major task of this investigation was to compare, by way of univariate or multivariate analysis, various combinations of simulation program-child study approaches. The sequential, hierarchical, and systematically structured computer simulation of human cognition (Simon, 1979) formed the basis of the present simulation program. It was expected that those students involved in some aspect of the simulation would demonstrate superior skills by scoring higher on a post-treatment measure of diagnostic abilities than students involved only in traditional child studies. It was found that students in the child study simulation group scored significantly higher than students in the child study group on only parts one and four of the final exam. This finding supported the contention that a specific form of simulation can benefit students who are being trained to do reading diagnosis, and can serve as a useful adjunct to the traditional practicum experience. (MER)

Collections: ADCIS

Challenge to Educational Technology. Proceedings of the ADCIS 1976 Summer Conference.
Association for the Development of Computer-Based Instructional Systems
Aug 1976
Not Available through ERIC.
This collection of 33 conference papers includes the keynote address, papers from the general sessions on papers from the folowing special interest groups: Education of the Deaf, Implementation, Health Sciences, and Elementary/Secondary/Junior College.

ED148297 IR005207
New Directions in Educational Computing. Proceedings/1977 Winter Conference.
Association for the Development of Computer-based Instructional Systems.
Feb 1977 324p.; Proceedings of the 1977 Winter Conference of the Association for the Development of Computer-based Instructional Systems (Wilmington, Delaware, February 21-24, 1977)
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021)
This collection of 39 conference papers is arranged by subject areas: keynote address; general topics; computer-based musical instruction; elementary, secondary, and junior college computer uses; health sciences computer uses; futures for courseware sharing; PLATO projects and uses; computer implementation issues; computers and the deaf; and evaluation by computer. (DAG)

ED160072 IR006231
New Directions in Educational Computing. Proceedings of ADCIS 1978 Conference.
Association for the Development of Computer-based Instructional Systems.
Mar 1978 575p.; For related documents, see IR 006 232-282 ; Parts may be marginally legible due to print quality
EDRS Price - MF02 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021)
The keynote address, given by Michael Allen, characterized the association as a group of devoted humanitarians who are committed to finding realistic educational and training alternatives. He discussed the potential role of computer-based education specialists in meeting general and specific instructional needs. Included in the proceedings are 59 papers arranged under the following section headings: general session, project reports, educators for the deaf, elementary/secondary/junior college, health education network users, and health sciences. See related documents for individual papers. (VT)

ED175447 IR007614
Mission of the Future. Proceedings of the Annual Convention of the Association for the Development of Computer-Based Instructional Systems. Volume I: General Session Papers and Project Reports (San Diego, California, February 27 to March 1, 1979).
Association for the Development of Computer-based Instructional Systems.
Mar 1979 332p.; Legibility varies; For related documents, see IR 007 614-616
Available from: Western Washington University, Bellingham, Washington 98225 (3 Volumes, $30.00)
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021)
The first of three volumes of papers presented at the 1979 ADCIS convention, this collection includes most of the 30 papers presented at the general session and 34 project reports. The general session opened with seven papers on various aspects of videodisc technology and five papers describing

phases in the life of CBE sites. The remaining presentations were concerned with a variety of topics, such as the use of a speech synthesizer with CBI, intelligent instruction systems, learning theory, evaluation, training teachers and administrators in computer applications, learner interaction in CAI, course development, authoring, and the application of bibliographic information retrieval techniques to CBE materials; a report on the development and implementation of CICERO at the Open University for distance learning is included. Projects described in brief reports include a university educational technology center, simulations for medical training, business applications, providing feedback in very large classes, CAI for the deaf, and CAI at several educational levels. Some papers include brief bibliographies. (RAO)

ED175448 IR007615

Mission of the Future. Proceedings of the Annual Convention of the Association for the Development of Computer-Based Instructional Systems. Volume II: Special Interest Groups (San Diego, California, February 27 to March 1, 1979).

Association for the Development of Computer-based Instructional Systems.
Mar 1979 472p.; Legibility varies; For related documents, see IR 007 614-616
Available from: Western Washington University, Bellingham, Washington 98225 (3 Volumes, $30.00)
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021)

The second of three volumes of papers presented at the 1979 ADCIS convention, this collection includes 37 papers presented to four special interest groups--computer based training, deaf education, elementary/secondary education/junior colleges, and health education. The eight papers on computer based training describe computer graphics, computer supported graphics, and simulations in military training; CBI in flight instruction; a new self-paced course on BASIC language programming; and CMI in vocational education. The ten papers scheduled for the educators of the deaf are concerned not only with projects for teaching language/communication and writing skills to the deaf, but with access to CAI for the blind and visually handicapped, and programs in special education. Projects described for the elementary/secondary/junior colleges group focused on curriculum development, classroom applications, CAI in special education, attitudes of high school students toward the computer, CMI in a large school system, a program for functionally illiterate adults, and a survey course in computer science in a community college. The health interest group heard nine papers on various aspects of medical training using CAI, simulations, computerized tests, and a set of computer self-evaluation units designed to accompany a physiology course. Some papers are illustrated with flow charts and diagrams and/or include brief bibliographies. (RAO)

ED175449 IR007616

Mission of the Future. Proceedings of the Annual Convention of the Association for the Development of Computer-Based Instructional Systems. Volume III: Users Interest Groups (San Diego, California, February 27 to March 1, 1979).

Association for the Development of Computer-based Instructional Systems.
Mar 1979 324p.; For related documents, see IR 007 614-616
Available from: Western Washington University, Bellingham, Washington 98225 (3 Volumes, $30.00)
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021)

The third of three volumes of papers presented at the 1979 ADCIS convention, this collection includes 30 papers presented to special interest groups--implementation, minicomputer users, National Consortium for Computer Based Music Instruction, and PLATO users. Papers presented to the implementation interest group were concerned with faculty reactions to CAI tutorials, review lessons in English compositions, thematic information text revisions, self-paced instruction, problem solving with automatic mediation, linear programmed instruction compared with CAI, the computer in educational institutions, CMI and student achievement, software development, and the role of the computer programmer. Minicomputer projects described focused on self-paced learning, a shared CAI control program, as a classroom teaching tool, the current state of the field, the development of PILOT, and personal computers. Music educators heard papers on courseware development for microcomputers, CAI in music theory, evaluation of competency based aural training, and ear training for non-music majors. Reports on PLATO included the teaching of sex education, process operator training, foundation visual design, adult basic skills, and optical letterspacing, as well as on precision motion analysis in biomechanics, microprocessor courseware delivery, and the development of a user's guide. Some papers include flow charts, diagrams, data tables, models, and/or bibliographies. (RAO)

**ED194047 IR008644

Computer-Based Instruction: A New Decade. Proceedings of the Annual Conference of the Association for the Development of Computer-Based Instructional Systems (Bellingham, Washington, March 31-April 3, 1980).

Association for the Development of Computer-based Instructional Systems.

Apr 1980 321p.; For related document, see ED 175 448.

EDRS Price - MF01/PC13 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

The 50 papers in this collection from the 1980 ADCIS conference address topics ranging from coverage of large scale computer-based education (CBE) systems to specific single-purpose applications. The conference papers are presented in the following categories: Special Interest Group for the Handicapped; Mini-Micro Special Interest Group; Special Interest Group for Computer-Based Training; Elementary, Secondary, Junior College Special Interest Group; National Consortium for Computer-Based Music Instruction; Health Special Interest Group; National Consortium for CBE in Home Economics; Designing Instruction in the Basic Skills for Use with Micro Computer Technology; and PLATO Users Group. An author index is provided, and descriptions of 26 additional projects are attached. (MER)

Collections: AEDS

ED125660 IR003752

Computer Assisted Instruction. Papers Presented at the Association for Educational Data Systems Annual Convention (Phoenix, Arizona, May 3-7, 1976).

Association for Educational Data Systems, Washington, D.C.

May 1976 120p.; For related documents, see IR 003 748-756; Some parts may be marginally legible due to print quality of original

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 for entire proceedings)

EDRS Price - MF01/PC05 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Two abstracts and seventeen articles on computer assisted instruction (CAI) presented at the 1976 Association for Educational Data Systems (AEDS) convention are included here. Four new computer programs are described: Author System for Education and Training (ASET); GNOSIS, a Swedish/English CAI package; Statistical Interactive Programming System (SIPS); and Instructional Dialogue Facility (IDF) which helps classroom teachers learn CAI languages. Six papers examine interactive computer systems and interactive CAI, and one paper describes an interactive educational system which uses video discs in conjunction with computers. Six papers describe various programs: a CAI course in logic instruction for department of defense personnel, CAI for computer science education, computers for drill and practice in math, and general use of CAI in elementary school classrooms. A computer program which monitors student progress in calculus is described, and user groups are the topic of one article. (CH)

ED125662 IR003754

Hardware Developments; Microcomputers and Processors; Grade School/High School Instructional; and Computer-Aided Design. Papers Presented at the Association for Educational Data Systems Annual Convention (Phoenix, Arizona, May 3-7, 1976).

Association for Educational Data Systems, Washington, D.C.

May 1976 51p.; For related documents, see IR 003 748-756; Some parts may be marginally legible due to print quality of original

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 for entire proceedings)

EDRS Price - MF01/PC03 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Compiled are ten papers describing computer hardware and computer use in elementary and secondary school instruction presented at the Association for Educational Data Systems (AEDS) 1976 convention. An oral/aural terminal is described followed by two papers about the use of minicomputers and microprocessors. Seven papers discuss various uses of the computer in elementary and high school instruction: a computer can be used to plot and display conic sections and environmental designs, to help teach reading skills, and to generate tests or homework exercises. One paper recommends the use of games in computerized drills, and another explains computerized demonstration of some mathematics principles. The importance of the school computer coordinator is outlined by the Minnesota Educational Computing Consortium. (CH)

ED125663 IR003755

Higher Education and Final Papers Presented at the Association for Educational Data Systems Annual Convention (Phoenix, Arizona, May 3-7, 1976).

Association for Educational Data Systems, Washington, D.C.

May 1976 46p.; For related documents, see IR 003 748-756; Some parts may be marginally legible due to print quality of original

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 for entire proceedings)

EDRS Price - MF01/PC02 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Five articles on computer use in higher education and three final papers presented at the Association for Educational Data Systems (AEDS) 1976 convention are included in this document. Implementing and evaluating computer technology in higher education is the subject of two articles, and another article describes instructional and administrative computing at a minority community college in a bilingual-bicultural setting. Application of a time sharing computer system to undergraduate business education and to teacher education is assessed in two papers. Computer use in a college-level high school biology course is outlined. Minicomputers for conducting real-time computer controlled experiments are evaluated. The document concludes with a case study of the publication of a course in computer programing. (CH)

ED125658 IR003750

Instructional (I). Papers Presented at the Association for Educational Data Systems Annual Convention (Phoenix, Arizona, May 3-7, 1976).

Association for Educational Data Systems, Washington, D.C.

May 1976 93p.; For related documents, see IR 003 748-756; Some parts may be marginally legible due to print quality of original

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 for entire proceedings)

EDRS Price - MF01/PC04 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Sixteen articles and two abstracts on the use of computers and electronic equipment in instruction presented at the Association for Educational Data Systems (AEDS) 1976 convention are included here. Uses of the computer to generate and solve mathematical models, to generate examinations, and to facilitate concept learning are examined. Six articles discuss simulation in the following areas: biology, macroeconomics, management, and business policy. Papers on computer assisted instruction cover instruction in accounting, geography, programing, diacritical marking, economics, and laboratory methods. One paper examines prediction of success in data processing training, and another discusses the use of programable, hand-held calculators for calculus instruction. A suggested programing curriculum for a small college is outlined. (CH)

ED125659 IR003751

Instructional (II); Computerized Testing; and CATC Discussion and Demonstration. Papers Presented at the Association for Educational Data Systems Annual Convention (Phoenix, Arizona, May 3-7, 1976).

Association for Educational Data Systems, Washington, D.C.

May 1976 91p.; For related documents, see IR 003 748-756; Some parts may be marginally legible due to print quality of original

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 for entire proceedings)

EDRS Price - MF01/PC04 Plus Postage.

Document Type: CONFERENCE PAPER (150)

Eighteen papers on instructional technology, computerized testing, and computer assisted test construction (CATC) presented at the 1976 Association for Educational Data Systems (AEDS) convention are included here. Two papers discuss computer assisted instruction in calculus and teacher education courses. The use of computers in theoretical mathematics, school media centers, and individualized instruction programs is presented in four papers. Goal programing in education is explained and the uses of the hand-held calculator for education are reviewed. Faculty rating policies for mathematics students are analyzed. Eight articles examine aspects of computerized testing and

CATC. They include an overview of computers and testing, the use of computerized quiz grading, interactive computerized testing, descriptions of SOCRATES, ALLCOMBS, CREAM, and the Classroom Teacher Support System. (CH)

ED175446 IR007613

Renaissance Man: The Key Component. Association for Educational Data Systems Proceedings: 17th Annual Convention, May 14-18, 1979.

Association for Educational Data Systems, Washington, D.C.

May 1979 378p.

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, D.C. 20036 ($10.00 prepaid)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

Eighty-six papers presented at the 17th Annual Association for Educational Data Systems convention cover the educational application of computers in the following areas: computer assisted instruction, instructional and learning processes, computer-related curriculum, educational administration, computer resources, and data-center administration. Many of the papers are introduced by author abstracts and contain research methods, results, and lists of references cited. For ease in locating individual papers, separate title and author indexes are provided. (RAO)

**ED192718 IR008630

A Gateway to the Use of Computers in Education. Proceedings of the Annual Convention of the Association for Educational Data Systems (18th, St. Louis, Missouri, April 13-16, 1980).

Association for Educational Data Systems, Washington, D.C.

Apr 1980 227p.; For a related document, see ED 175 446.

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, DC 20036 ($12.00).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141); RESEARCH REPORT (143)

The 45 papers in this collection are contributed, refereed papers submitted for publication in the proceedings of the 18th Annual Association for Educational Data Systems Convention. They cover educational applications of computers in the following areas: computer assisted instruction, computer managed instruction, instructional and learning processes, computer-related curriculum, educational administration, computer resources, and data-center administration. Many papers are introduced by author abstracts and contain research methods, results, and lists of references cited. Information regarding the "vendor sessions" is not included. (CHC)

**ED201410 PS012175

Exploring with Computers in Vikingland. AEDS-81 Convention Proceedings (Minneapolis, Minnesota, May 5-8, 1981).

Association for Educational Data Systems, Washington, D.C.

May 1981 319p.; Figures appearing on pages 21, 23-28, and 273 of original document may not reproduce well due to small print size.

Available from: Association for Educational Data Systems, 1201 Sixteenth Street, N.W., Washington, DC 20036 (Paper, $15.00).

EDRS Price - MF01/PC13 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021)

This publication presents a summary of and index to the presentations given at the Association for Educational Data Systems (AEDS) Convention held in Minneapolis, Minnesota, during May 5-8, 1981. Summarized are 66 short papers that cover a variety of educational computing activities and projects completed by educational institutions, organizations, and individuals across the United States. To facilitate use of the publication, papers are indexed by author and by the following topics: administrative computing, computer awareness/literacy, computer languages, computers and music education, computers and special education, computers and the media center, computers in higher education strand, instructional computing, instructional design, instructional management, software clearinghouses/ev-aluation, and videodisc. Lists of AEDS' 1981 convention team, regional workshop coordinators, directors, affiliate group presidents and sustaining members are also included. (Author/MP)

Collections: Conference on Computers in the Undergraduate Curriculum

ED156160 IR006142

Proceedings of 1977 Conference on Computers in the Undergraduate Curricula.

Christensen, Don A., Ed.

Michigan State Univ., East Lansing.

Jun 1977 354p.; For related documents, see IR 006 428-449 ; Parts of the document may be marginally legible

Available from: Ted Sjoerdsma, 128 F LCM, University of Iowa, Iowa City, Iowa 52242 ($10.00)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021)

The proceedings of the Eighth Conference on Computers in Undergraduate Curricula include 54 technical reports on the use of computer technology in various areas of undergraduate curricula, including the biological sciences, business, economics, education, humanities, mathematics, physics, psychology, chemistry, engineering, social science, and statistics. Twelve additional reports are concerned with computer graphics, simulation, and use of the computer in testing. A computer aid for record keeping and two college programs are also described in individual papers. (CMV)

ED178067 IR007809

Proceedings of 1978 Conference on Computers in the Undergraduate Curricula: CCUC9 (9th, Denver, CO, June 12-14, 1978).

Prather, Ronald E., Ed.

Jun 1978 393p.; For related documents, see IR 007 810 and ED 156 160

Available from: 111 Weeg Computing Center, University of Iowa, Iowa City, Iowa 52242 ($10.00 per copy)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

The 48 papers in this conference report are concerned with the use of computers in undergraduate curricula in various educational settings. Articles are split into general topic headings, including Computer Augmented Video Education (CAVE), Mathematics, Simulation, Testing, Humanities, Social Science, Computer Assisted Instruction/Computer Managed Instruction, Computer Science, Business, Science, Statistics, and Computer Services. (JEG)

Collections: National Educational Computing Conference

ED178068 IR007810

Proceedings of NECC 1979 National Educational Computing Conference (1st, Iowa City, IA, June 25-27, 1979).

Harris, Diana, Ed.

Jun 1979 393p.; For related documents, see IR 007 809 and ED 156 160; Legibility of some figures and examples varies; Photograph removed

Available from: 111 Weeg Computing Center, University of Iowa, Iowa City, Iowa 52242 ($10.00 per copy)

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: GENERAL REPORT (140); CONFERENCE PROCEEDINGS (021)

The 68 presentations included in this conference proceedings discuss and evaluate educational computing, computer science, and computer engineering. This conference was held instead of the tenth Conference on Computers in Undergraduate Curricula, (CCUC) in an effort to expand the scope of information covered; the National Educational Computing Conference (NECC) is the first product of those attempts. Papers are grouped into broad subject areas, including Computer Based Education, Engineering, Pre-College Teacher Education, Computer Assisted/Managed Instruction, Minority Institutions, Natural Sciences, Computer Science, Pedagogy, Pre-College Environment, Simulation in Business and Economics, Social Science, Mathematics, Elementary School Children Programs, Micros and Minis, Handicapped, Statistics, Health, and Humanities. An author index is included. (JEG)

**ED194060 IR008912
Proceedings of NECC/2 National Educational Computing Conference 1980 (Norfolk, Virginia, June 23-25, 1980).
Harris, Diana, Ed.; Collison, Beth, Ed.
Iowa Univ., Iowa City. Computer Center.
Jun 1980 306p.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

This proceedings, which includes 52 papers and abstracts of 13 invited and nine tutorial sessions, provides an overview of the current status of computer usage in education and offers substantive forecasts for academic computing. Papers are presented under the following headings: Business--Economics, Tools and Techniques for Instruction, Computers in Humanistic Studies, Computer Literacy, Science and Engineering, Structured Programming, ACM Elementary and Secondary Schools Subcommittee, Computer Science Education, Integrating Computing into K-12 Curriculum, Mathematics, Testing-Placement, Pre-College Instructional Materials, Minority Institutions--ECMI, Computer Laboratories in Education, Computer Games in Instruction, and Computing Curricula. Abstracts are provided for 13 invited sessions dealing with such topics as microcomputers in education; research in microcomputer uses; personal computing; educational computing: past, present, and future; the Open University; CAUSE program and projects; funding academic computing programs; computer-based resource sharing; computers and instruction; improving utilization of 2-year college computer centers; teaching computer ethics; data sets available from the federal government; and MIS education, as well as nine tutorial sessions designed to provide attendees with the opportunity to expand their appreciation of and involvement in educational computing. (CHC)

**ED207526 IR009613
Proceedings of the NECC 1981. National Educational Computing Conference (3rd, North Texas State University, Denton, Texas, June 17-19, 1981).
Harris, Diana, Ed.; Nelson-Heern, Laurie, Ed.
Iowa Univ., Iowa City. Weeg Computing Center.
Jun 1981 361p.; For related document, see ED 194 060.
Available from: Computer Science Department, University of Iowa, Iowa City, IA 52242 ($10.00).
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141)

This volume includes the texts of more than 50 papers presented at a conference which was organized to present in one forum all major work regarding computers in education in the United States, as well as abstracts of the special sessions, tutorials, and project presentations which took place at the conference. Among the topics covered in these materials are the following: simulations, videodisc project funding, administration, computer literacy, business, higher education, computer science, humanities, science, social science, preschool/elementary applications, graphics, mathematics, engineering, and health education. (Author/LLS)

Collections: Miscellaneous

ED167184 IR007104
Computerized Multi-Media Instructional Television. COMIT. Proceedings of a Symposium.
Andrews, Gordon C., Ed.; Knapper, Christopher K., Ed.
Waterloo Univ. (Ontario).
6 Apr 1978 119p.; Proceedings of a Symposium on COMIT (Waterloo, Ontario, Canada, April 6, 1978); For related documents see IR 007 186-193 and IR 007 285
EDRS Price - MF01/PC05 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141)

A joint research project in educational techniques, which was conducted by the University of Waterloo and the IBM Corporation, explored the use of color television with random-access videotape under computer control. At the end of the three-year project, papers were solicited from all COMIT (Computerized Multi-Media Instructional Television) participants, and 12 of the 15 professors who had authored courses submitted papers. A representative sample of seven papers was presented at a one-day COMIT Symposium, some accompanied by videotaped demonstrations that illustrated the teaching techniques used. In order to provide as complete a record of the project as possible, all 12 of the papers from participants are included in this volume (grouped, where possible, by subject), as well as comments by the project director and the coordinator from IBM and a summary of the pedagogical lessons learned from COMIT. Courses described include environmental engineering, survey design, advanced calculus, organic synthesis, biology, human movement, ice hockey practice, football, leisure experience, history of art, and English. The appendix contains the schedule for the COMIT Symposium with the names of the speakers. (Author/JEG)

ED125608 IR003695

Computer Assisted Instruction: The Best of ERIC, 1973-May 1976.

Beard, Marian

Stanford Univ., Calif. ERIC Clearinghouse on Information Resources.

Aug 1976 42p.; For a related document see ED 076 025

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: BIBLIOGRAPHY (131)

This bibliography contains annotations of reports, reviews, and other documents on computer-assisted instruction (CAI) derived from a search of the Educational Resources Information Center (ERIC) system. It covers 1973 to May 1976 and serves as an update to an earlier paper, "The Best of ERIC: Recent Trends in Computer Assisted Instruction" (ED 076 025). Section one covers major issues of interest, and section two presents specific applications and cases of CAI. PLATO and TICCIT, two interactive CAI programs, are the subjects of entries in section three. Research via CAI is covered in section four, and the last section covers descriptions of other CAI work such as applications in teacher training, development of author languages, and districtwide experience implementing CAI. (CH)

**ED186023 IR008389

An Annotated Bibliography for Instructional Systems Development.

Berkowitz, Melissa; O'Neil, Harold F., Jr.

Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.

Aug 1979 57p.; For related documents, see ED 122 018-022.

Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (1980-671-143/3)

EDRS Price - MF01/PC03 Plus Postage.

Document Type: BIBLIOGRAPHY (131); NON-CLASSROOM MATERIAL (055)

This annotated bibliography lists instructional development resources relevant to the Interservice Procedures for Instructional Systems Development Model (ISD), a standardized model providing for the assessment of training needs; the design, development, and implementation of instruction; and the assessment of instructional quality. Following a literature search, relevant documents were classified according to the 19 block ISD model, and summaries were written to identify documents on authoring aids, procedures, or techniques. The purpose of each block in this model is defined, and documents are listed alphabetically within blocks. A status section for each block indicates the availability of authoring aids sufficient to guide an individual through all activities specified by the block, as well as the availability of relevant procedures and techniques that could be developed into authoring aids. Directions for future research, based on the lack of authoring aids available, are identified. (RAO)

ED118061 IR002954

The Papers of the ACM SIGCSE-SIGCUE Technical Symposium, Computer Science and Education (Anaheim, California, February 12 and 13, 1976).

Colman, Ron, Ed.; Lorton, Paul, Jr., Ed.

Association for Computing Machinery, New York, N.Y. Special Interest Group in Computer Science Education.; Association for Computing Machinery, New York, N.Y. Special Interest Group in Computer Uses in Education.

SIGCSE Bulletin, v8 n1 Feb 76, SIGCUE Topics, V2 Feb 76

Feb 1976 399p.

Available from: ACM Order Department, P. O. Box 12105, Church Street Station, New York, N.Y. 10249 ($15.00/members; $20.00/non-members)

Document Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021)

Over 65 papers presented at a joint symposium sponsored by the Association for Computing Machinery's Special Interest Groups on Computer Uses in Education and on Computer Science Education are gathered here. The papers cover a wide range of topics, including structured programing, computer literacy, computer science education, computerized test generation, secondary school mathematics instruction, computer-assisted instruction, advanced computer science courses, and computers in society. (JY)

**ED192818 IR008906

Guide to Microcomputers.

Frederick, Franz J.

Association for Educational Communications and Technology, Washington, D.C.; ERIC Clearinghouse on Information Resources, Syracuse, N.Y.

1980 159p.

Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.

Available from: AECT Publications Sales, 1126 16th Street NW, Washington, DC 20036 ($9.50/AECT members; $11.50/non-members).

EDRS Price - MF01/PC07 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); ERIC PRODUCT (071)

This comprehensive guide to microcomputers and their role in education discusses the general nature of microcomputers; computer languages in simple English; operating systems and what they can do for you; compatible systems; special accessories; service and maintenance; computer assisted instruction, computer managed instruction, and computer graphics; time sharing and resource sharing; potential instructional and media center applications; and special applications, e.g., electronic mail, networks, and videodiscs. Available resources are presented in a bibliography of magazines and journals about microcomputers and software and their uses, a selected list of companies specializing in creating specialized languages and applications programs for microcomputers, and a selected list of companies specializing in the preparation of educational programs for use on microcomputers. (CHC)

ED143345 IR005088

Conduit Catalog of Reviewed and Tested Curriculum Materials.

Hepler, Molly L., Ed.

Iowa Univ., Iowa City.

1977 57p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01/PC03 Plus Postage.

Document Type: BIBLIOGRAPHY (131)

CONDUIT reviews and packages computer-based materials as alternative methods of teaching in higher education. Curriculum areas include biology (4 packages), chemistry (3), management science (9), mathematics (2), physics (6), and social science (17). This catalog individually describes the programs including suggested previous coursework, specific subject areas emphasized, an abstract of the problem posed, and anticipated results. A price list and ordering information are included. (JAB)

ED148396 IR005573

Academic Computing Directory. A Search for Exemplary Institutions Using Computers for Learning and Teaching.

Human Resources Research Organization, Alexandria, Va.

1977 125p.

Sponsoring Agency: National Science Foundation, Washington, D.C.

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: DIRECTORY (132)

This directory identifies some of the schools, colleges, and universities that successfully use computers for learning and teaching in the United States. It was compiled to help teachers, administrators, computer center workers, and other educators exchange information, ideas, programs, and courses. Individuals listed as contacts are willing to share their knowledge with others. Ninety-four elementary and secondary schools, 71 public school districts, 37 community colleges, 158 private and public colleges and universities, and seven public access institutions are listed. Entries are arranged geographically by state for each type of institution, and include information on reasons for inclusion, enrollment, users, illustrative applications, computers, terminals, public information, and contact. A list of exemplary institutions in academic computing is attached. (Author/KP)

ED174247 IR007531

Annotated Bibliography of Human Factors: Laboratory Reports (1945-1968). Supplement #3, 1976-1978.

Naval Training Equipment Center, Orlando, Fla. Human Factors Lab.

Apr 1978 35p.

Available from: National Technical Information Services (NTIS), 5258 Port Royal Road, Springfield, Virginia 22161

EDRS Price - MF01/PC02 Plus Postage.

Document Type: BIBLIOGRAPHY (131)

A complete bibliographic reference and an abstract are given for each publication of the Human Factors Laboratory from 1976-1978, including journal articles and conference proceedings papers which members of the Laboratory published during the same period. Three indexes--index by source (contractor or in-house), author index, and subject matter index--are also provided. (Author)

**ED219057 IR010225

The CEDAR Project and Evaluation of CBL: A Bibliography.

Rushby, N. J.

London Univ. (England). Imperial Coll. Computer Centre.

Jan 1981 27p.; For related documents, see ED 176 800, ED 176 802, and ED 176 804-807.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); BIBLIOGRAPHY (131)

A brief review is provided of the strategy, information services, seminars, demonstrations, software acquisition policy, educational development, and cooperative efforts of the CEDAR Project, which aims to encourage and facilitate the development and effective use of educational computing within Imperial College, the University of London, and elsewhere. Included are lists of 18 publications and reports from the project and 14 papers published in journals, and an extensive bibliography of reports on the evaluation of educational computing programs is appended. Use of the CEDAR online enquiry services is discussed in terms of the CEDAR bibliography; the computer assisted learning (CAL) package index; searching the catalogs; logging onto the computer and the man-machine dialogue; running the enquiry program, including enquiry program directives, i.e., the feature directive, the list directive, and finish and stop directives, and giving an example of a complete enquiry session; and adding to the catalogs. (RBF)

ED176805 IR007827

Computer Based Learning in the Soviet Union—I.

Rushby, N. J.

London Univ. (England). Imperial Coll. Computer Centre.

Oct 1978 16p.; Best copy available; For related documents, see IR 007 784 and IR 007 789

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: BIBLIOGRAPHY (131)

This bibliography lists 86 references, most of which are annotated, to papers and journal articles on computer assisted learning (CAL) in the Soviet Union. Topics dealt with include problem solving models, decision strategies, programmed instruction, algorithms, simulation, educational games, databases, and testing. The references have been extracted from the computer based CAL bibliography maintained by the CEDAR Project. (Author/CMV)

ED180441 IR007915

Proceedings of the Annual Conference on Academic Computing Applications (6th, Indiana University Northwest, Bloomington, Indiana, April 6, 1979).

Stentz, Michael, Ed.; Motsinger, Linda, Ed.

Indiana Univ. Northwest, Gary.

6 Apr 1979 237p.; Some examples and figures may not reproduce

Available from: Wrubel Computing Center, Indiana University, Mem W 002, Bloomington, IN 47401 ($3.50 per copy)

EDRS Price - MF01/PC10 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); GENERAL REPORT (140)

Topics which range from the more popular computing applications in accounting, statistics, and administration to the less ordinary applications of the computer to the fields of fine arts, medicine, and linguistics, are discussed in this collection of 22 conference papers. The papers are divided into four tracks: the first deals with statistical computing and methods for teaching it; the second is concerned with applications of the computer in theater and journalism, music, the arts, and general utility programs; the third includes information about administration, computer simulations, plotting applications, and computing futures; and a concluding paper summarizes a grammatical concordance package program for the Greek New Testament. (JEG)

ED127928 IR003890

Index to Computer Based Learning, 1976 Edition.

Wang, Anastasia, Ed.

Wisconsin Univ., Milwaukee. Instructional Media Lab.

1976 1,836p.; Document is on 42X microfiche only (4 fiche)

Available from: Instructional Media Laboratory, University of Wisconsin, P.O. Box 413, Milwaukee, Wisconsin 53201 ($9.50)

Document Not Available from EDRS.
Document Type: BIBLIOGRAPHY (131)

Computer-based curriculum materials in 138 different subject areas are listed in this microfiched index. All the materials are cross-indexed by subject matter, program language, central processor, instructional strategies, and source. Each entry is described by 23 different characteristics, including subject field, program characteristics, source, description, level, instructional style, and availability. (EMH)

Collections: MicroSIFT

**ED201308 IR009196

Educational Computing in the Northwest, 1979: Status, and Needs for Information and Assistance.

Edwards, Judith B.
Northwest Regional Educational Lab., Portland, Oreg.
Jun 1979 54p.
Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.
EDRS Price - MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

Two surveys were conducted by the Computer Technology Program of the Northwest Regional Educational Laboratory in the spring of 1979 to obtain information for planning a clearinghouse of computer-based educational materials and a regional program of user support and technical assistance. A postcard questionnaire was sent to all school superintendents in the six states in the region to determine the current status and future plans for computer use in administration and instruction. A more comprehensive study of information and assistance needs was conducted through a survey of teachers who were at least somewhat knowledgeable of or experienced with using computers in instruction. The questionnaire for teachers was composed of six sections: demographic data, computer use, meeting current information and assistance needs, software sources, information needs, and assistance needs. The results of the two surveys are reported with 17 supporting tables. The conclusions include a discussion of availability of computer terminals, uses of computers, current ways of meeting information and assistance needs, and needs for information and assistance. A sample questionnaire and cover letter from each survey are appended. (CHC)

**ED216671 IR009996

MicroSIFT News. October 1980 (and) October 1981.

Marler, Jerilyn, Ed.
Northwest Regional Educational Lab., Portland, Oreg.
MicroSIFT News, v1 n1 Oct 1980 v2 n1 Oct 1981
1981 31p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: SERIAL (022); NON-CLASSROOM MATERIAL (055); GENERAL REPORT (140)

This document comprises the first two issues of a newsletter published by the Microcomputer Software and Information for Teachers (MicroSIFT) Clearinghouse, which is a project designed to establish effective procedures for the collection, evaluation, and dissemination of materials and information, and develop a flexible user support and technical assistance component. The first issue describes the project, how the network was formed, courseware evaluation procedures, package distribution services, and hardware at the clearinghouse. Workshops and seminars offered by MicroSIFT, four publications on software sources and hardware news, and notes on regional information are also listed. The second issue describes the Evaluator's Guide and evaluation instruments developed by MicroSIFT, gives a bibliography of 28 resources on microcomputer selection, lists the participants in the field testing of the evaluation process, and provides the criteria for evaluating the content and instructional quality of courseware. Evaluations of 12 programs using this process include producer, version, required hardware, techniques, documentation available, instructional objectives, instructional prerequisites, content and structure, potential uses, major strengths, major weaknesses, and evaluation summary. Seven catalogs for educational applications and four for various fields are also listed. (CHC)

Collections: Administrators' Handbooks

**ED213393 IR010014

Microcomputers in Today's Schools: An Administrators' Handbook.

Northwest Regional Educational Lab., Portland, Oreg.

Nov 1981 258p.; Produced for the Conference on Microcomputers in Today's Schools (Portland, Oregon, November 11-12, 1981).

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

EDRS Price - MF01/PC11 Plus Postage.

Document Type: REVIEW LITERATURE (070); NON-CLASSROOM MATERIAL (055); COLLECTION (020)

This handbook contains journal articles, reports, and documents collected for the purpose of providing school administrators with current information on computer applications in public schools. The first part of the handbook includes reports on computer oriented programs in the schools of Alaska and Oregon, procedures for assessing computer needs, recommendations for evaluating and purchasing computer hardware, and some model applications of computers for teaching the handicapped and/or in basic skills programs. The second part provides profiles of schools and school districts currently using microcomputers as part of their instructional program. Each profile presents a description of a specific computer project, including hardware, software, personnel, costs and a contact person and phone number for arranging on-site visits. Additional sources of information on computer applications in educational settings are identified in bibliographies accompanying many of the reports and in a resource list at the end of the handbook. (MER)

**ED212076# EA014352

School Administrator's Introduction to Instructional Use of Computers.

Moursund, David

International Council for Computers in Education, Eugene, Oreg.

1980 48p.

Available from: International Council for Computers in Education, c/o Dept. of Computer and Information Science, University of Oregon, Eugene, OR 97403 ($2.50 prepaid; quantity discounts).

Document Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

To help educational administrators and policymakers use computers effectively, this handbook provides an overview of computers and their role in education. Using a question-and-answer format, the author first defines computers, interactive computing, computer hardware and software, and programing languages. The same format is followed in the subsequent discussions of the kinds of problems computers solve; the instructional, administrative, and research uses of computers; computers' impact on curricula; computer-assisted instruction and other instructional uses; computer literacy; educational uses for calculators; and the barriers, goals, and costs involved in the instructional use of computers and calculators. A brief guide to periodical literature is added to help educators learn more about computers. A glossary at the end defines terms frequently used in computer education. (Author/RW)

Collections: Single Editions

**ED208849 IR009758

Reference Manual for the Instructional Use of Microcomputers. Volume I (Release II).

Forman, Denyse; And Others

JEM Research, Victoria (British Columbia).

1981 873p.; Legibility may vary. For related documents, see IR 009 75[illegible]-757 and IR 009 777.

Available from: JEM Research, Discovery Park, P.O. Box 1700, Victoria, B.C. V8W 2Y2, Canada ($75.00)

EDRS Price - MF06/PC35 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); DIRECTORY (132)

This manual is intended to provide educators with information and guidelines for locating, selecting, and purchasing commercially available courseware for the Apple II microcomputer. A courseware index is provided which lists programs in broad subject areas and grade levels. Information given for each program includes its DOS, language, cost, publisher, and distributor, as well as a short description. This index can be used to locate commercially available programs in a particular subject area and for a specific grade level. Catalogs from 63 publishers and producers of microcomputer courseware are included, as well as an alphabetized list of the addresses of more than 200 publishers, distributors, and manufacturers of computer products. An annotated bibliography of microcomputer journals, magazines, and newsletters provides descriptions of the publications, the addresses and yearly subscription rates, and comments on the general usefulness of the publications. A list of selected compatible accessories and expansion options for the Apple II is also provided. (Author/LLS)

**ED196409 IR008981

Individualized Learning Using Microcomputer CAI.
Hinton, John R.
Cabrillo Coll., Aptos, Calif.
15 Mar 1980 26p.
EDRS Price - MF01/PC02 Plus Postage.
Document Type: BIBLIOGRAPHY (131); REVIEW LITERATURE (070)

This review of the literature on individualized instruction entered in the ERIC system between November 1978 and October 1979 covers the development and sharing of individualized learning modules and systems; mastery learning; applications of television to individualized instruction; descriptive and research reports on individualized instruction-learning; assistance for teachers in the development of individualized courses and topics; a variety of applications of individualized learning in both formal and nonformal educational programs; computer applications and assistance for new users; dissemination of materials for teachers; computer equipment selection; research on various uses of the computer; and the impact of the microcomputer, including a review of current users, software exchanges, hardware system trends, and examples of specific applications. ERIC documents and journal articles comprise the larger part of the bibliography. (MER)

**ED210995 HE014609

Microcomputers in Higher Education.
McLean, Robert S., Ed.; McLean, Ruth W., Ed.
Council of Ontario Universities, Toronto. Office of Teaching and Learning.
University Education News, v2 n1 Oct 1981
Available from: Office of Teaching and Learning, Council of Ontario Universities, 130 St. George St., Suite 8039, Toronto, Ontario, M5S 2T4, Canada.
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: PROJECT DESCRIPTION (141); SERIAL (022)

Some of the areas in which Ontario educators currently employ microcomputers in higher education are addressed in several articles, bibliographies, and book reviews. Various uses of computer-managed instruction and computer-assisted instruction (CAI) at Humber College of Applied Arts and Technology are outlined by Frank A. Ford. Microcomputer CAI at Sheridan College of Applied Arts and Technology is described by Ted Bangay, and CAI work in the language laboratory at the University of Waterloo is considered by Rebecca Anders. According to Nick Solntseff of McMaster University, universal computer literacy should have top priority in both schools and postsecondary institutions during the 1980s. He notes uses of computers and telecommunications in other countries. Computer literacy at York University is considered, based on an interview with Peter Danielson. The need for research to discover how computer-literate students differ from nonliterates and how these differences can be used to make them more effective learners are proposed by Ronald G. Ragsdale. The involvement of artists with microelectronics and computers, which crosses the boundaries of time and space, software and hardware, and culture and technology, is considered by Richard H. Hill, who also discusses the role of the Photo-Electric Arts Department of the Ontario College of Art. Peter Boos describes the Keyboard Computer Music system and its applications, and R. E. Drake describes the purpose of the Educational Computing Organization of Ontario, which seeks to exchange and disseminate information on the educational use of computers in Ontario. An annotated bibliography of microcomputer publications by Ron Adams and a second annotated bibliography on microcomputers and higher education and ongoing applications by Janette M. Baker are presented. (SW)

**ED216678 IR010152

Bringing Computers into College and University Teaching. Papers Presented at a Symposium Held under the Auspices of the Higher Education Research and Development Society of Australasia (Canberra, Australia, November 19, 1980).
Miller, Allen H., Ed; Ogilvie, John F., Ed.
Higher Education Research and Development Society of Australasia, Sydney. (Australia).
19 Nov 1980 66p.
EDRS Price - MF01/PC03 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141)

The use of computers in higher education teaching programs is discussed in 16 papers and reports. Applications of computers in teaching particular subjects including prehistory and anthropology, mathematics, Hindi, plant science, chemistry, language, medicine, drawing, statistics, and engineering are discussed in 10 of the contributions. The other papers address attitudes and barriers to the use of computing in teaching and learning, recent developments in hardware applicable to computer assisted instruction, interactive graphics and image displays, and artificial intelligence. A 105-item bibliography is included. (CHC)

**ED209889 EC140606

Computer Connections for Gifted Children and Youth.

Nazzaro, Jean N., Ed.

ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.

1981 87p.

Sponsoring Agency: National Inst. of Education (ED), Washington, D.C.

Available from: ERIC Clearinghouse on Handicapped and Gifted Children, The Council for Exceptional Children, 1920 Association Dr., Reston, VA 22091 ($1.00).

EDRS Price - MF01/PC04 Plus Postage.

Document Type: COLLECTION (020); PROJECT DESCRIPTION (141); ERIC PRODUCT (071)

Written by computer specialists, teachers, parents, and students, the 23 articles emphasize the role computers play in the development of thinking, problem solving, and creativity in gifted and talented students. Articles have the following titles and authors: "Computers and Computer Cultures" (S. Papert); "Classroom Computers--Beyond the 3 R's" (F. Bell); "Reflecions of a Computer Language Nut" (S. Bloch); "It Started with Games" (C. Karnes); "Two Programs from a Young Eighth Grader" (S. Bahcall, H. Nelson); "Teaching Parents About Using Microcomputers" (T. Dwyer, M. Critchfield); "Children and Home Computers--Some Observations on the First Generation" (B. Banet); "An Apple a Day Keeps a Kid Occupied" (R. Buszta); "Microcomputers for Gifted Microtots" (A. Doorly); "Kids and Computers--The Future Is Today" (S. Larsen); "Micros 'GOTO' School" (D. Piele); "The Hampton City Schools Computer Program" (N. Harkavy); "The Paducah Tilghman High School for Gifted Students" (S. Davis, P. Frothingham); "Computers...Are All Dinosaurs Dead?" (D. Glover); "The Talcott Mountain Science Center" (D. Barstow); "Computeronics--A Course in Computer Literacy" (P. Bird); "Bringing Microcomputers into Schools" (G. Ropes, H. Gaylord); "Statewide Educational Computer Systems--The Many Considerations" (K. Hausmann); "Van Helps Schools Select the Right Computer" (B. Staples); "Some Thoughts on Computers and Greatness in Teaching" (T. Dwyer); "The Hacker Papers"; and "Educational Software" (D. Lubar). Lists of printed materials, vendors and manufacturers, and resources on using microcomputers in schools and classrooms conclude the document. (SB)

**ED205478 SP018468

Using Computers to Enhance Teaching And Improve Teacher Centers. A Report of the National Teachers Centers Computer Technology Conference.

Sadowski, Barbara R., Ed.; Lovett, Charles, Ed.

Houston Univ., Tex.

1981 94p.

Sponsoring Agency: Department of Education, Washington, D.C.

EDRS Price - MF01/PC04 Plus Postage.

Document Type: PROJECT DESCRIPTION (141); SERIAL (022)

A conference of teacher center directors was held to explore the applications of computers to education. Three strands of the conference were presented: management, information systems and communications, and instruction. The papers given at the conference provide a primer for teachers and teacher center directors who are beginning to work with computers. The first four papers give a perspective on the computer in society today and in the future, with illustrations of specific uses of computers in educational settings. Other papers discuss how teacher center communications and management can be improved through the use of microcomputers and how computer-assisted or computer-managed instruction can be used in schools. Positive implications for teachers are also presented. Appendices provide a glossary and list educational computer resources and organizations. (FG)

**ED205216 IR009523

Microcomputers in Education: Getting Started. Conference Proceedings (Tempe, Arizona, January 16-17, 1981). Watson, Nancy A., Ed.

Arizona State Univ., Tempe. Coll. of Education.

Jan 1981 349p.; Legibility varies.

Available from: Gary Bitter, Arizona State University, Payne 203, Tempe, AZ 85281 ($10.00).

EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055)

Included in these proceedings are brief write-ups of many of the 55 presentations given at a conference for elementary and secondary teachers and administrators. The strands of the conference emphasized using microcomputer technology in elementary education, secondary education, special education, and administration. General interest sessions were also held. The keynote address entitled "The Challenge of the 80's: Computer Literacy," was given by Dr. Andrew Molnar of the National Science Foundation. Sessions focused on: computer literacy, computer assisted instruction in the basic skill areas at elementary and secondary levels, applications for microcomputers in special education and gifted education, evaluating microcomputer systems, hardware and software comparisons, career education and guidance information systems, instructional techniques for teaching BASIC programing language to elementary and secondary students, designing computer proposals for federal funding, and microcomputers in the Fine Arts areas. Appended is a bibliography of BASIC computer books and lists of computer journals, film companies producing films about computers, microcomputer manufacturers, and software vendors. (Author/LLS)

Collections: EDUCOM

**ED191664 SE031637

The Fourth Inventory of Computers in Higher Education: An Interpretive Report. EDUCOM Series in Computing and Telecommunications in Higher Education, 4.

Hamblen, John W., Ed.; Landis, Carolyn P., Ed.

Interuniversity Communications Council (EDUCOM), Princeton, N. J.

1980 356p.; Appendices A and B contain small and light print and are marginally legible.

Sponsoring Agency: National Science Foundation, Washington, D.C.

Available from: Westview Press, Inc., 5500 Central Ave., Boulder, CO 80301 (no price quoted).

EDRS Price - MF01/PC15 Plus Postage.

Document Type: STATISTICAL MATERIAL (110); RESEARCH REPORT (143)

This is the fourth in a series of interpretive reports on the use of Computers in Higher Education. This book is based on a 1976-77 survey. The authors developed the questionnaire for the fourth inventory with the cooperation of 18 representatives from instructional research, administrative computer user groups, and other interested parties. The report also contains several interpretive essays designed to identify changes and trends in computer science and computer usage in higher education. Individual chapter titles are: Institutional Resources for Computing; Computer Systems Changes; Computing Center Organization; Administrative Uses of Computers; Instructional Uses of Computers; Changes in Research Computing in Higher Education; Computing in Minority Institutions - 1976-77; Networks and Special Service Organizations; Computer Science-Related Degree Programs at the Associate Level; and Computer Science-Related Degree Programs at the Bachelor's Level. (MP)

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